



Table of Contents

	Page
§1 INTRODUCTION	1-1
§2 SAFETY PRECAUTIONS	2-1
§3 TROUBLE SHOOTING.....	3-1
§4 SUB TROUBLE SHOOTING	4-1
4.1 Initialization screen does not appear on the CB display.	4-1
4.1.1 Backlight of the LCD module does not light up.	4-2
4.2 Initialization is not completed properly.	4-3
4.2.1 The battery AS does not move to the right and left.	4-4
4.2.2 The R disk AS does not turn.	4-5
4.2.3 The L disk AS does not turn.	4-7
4.2.4 The PD and convergence of the MB is not initialized properly.	4-9
4.2.5 The right disk of the MB is not initialized properly.	4-10
4.2.6 The left disk of the MB is not initialized properly.	4-11
4.3 An error message appears.	4-12
4.3.1 “Error 01: Communication Error CB-MB” appears.	4-13
4.3.2 “Error 11: Communication Error CB-RB” appears.	4-14
4.3.3 “No appointment data!!” appears.	4-14
4.3.4 “Chart doesn’t work.” appears.	4-15
4.3.5 “Setup data is initialized.” appears.	4-16
4.3.6 “CF card -- Read Error!!” appears.	4-16
4.3.7 “CF card -- Write Error!!” appears.	4-16
4.3.8 “CF card -- File Error!!” appears.	4-16
4.3.9 “CF card -- File not found!!” appears.	4-16
4.3.10 “CF card -- Card not found!!” appears.	4-16
4.3.11 “No data!!” appears.	4-16
4.4 The instrument cannot be operated with the control box.	4-17
4.4.1 The instrument cannot be operated with the switches.	4-17
4.4.2 The instrument cannot be operated by turning the dial.	4-18
4.4.3 The instrument cannot be operated with the touch-screen panel.	4-18
4.5 The compact flash memory card cannot be used.	4-19
4.6 The IC card cannot be used.	4-19
4.7 The printer does not print.	4-20
4.8 The communication with the auto refractometers or lensmeter cannot be done.	4-21
4.9 The chart projector does not work as specified with the control box.	4-22

§5	REMOVING COVERS	5-1
5.1	Covers of the main body	5-1
5.1.1	Face shields R and L	5-1
5.1.2	Rear covers	5-1
5.1.2.1	Rear cover R	5-1
5.1.2.2	Rear cover L	5-1
5.1.3	Front covers	5-2
5.1.3.1	Front cover R	5-2
5.1.3.2	Front cover L	5-2
5.1.4	Knob S AS	5-2
5.1.5	Upper cover J	5-3
5.1.6	Upper rear cover	5-3
5.1.7	Upper cover F	5-3
5.2	Control box covers	5-4
5.2.1	Rear cover AS	5-4
5.2.2	EMC cover	5-4
§6	REPLACEMENT	6-1
6.1	Battery AS	6-1
6.2	Disk AS	6-2
6.2.1	R disk AS (△)	6-2
6.2.2	L disk AS (△)	6-2
6.3	Boards R and L	6-2
6.3.1	Board R	6-2
6.3.2	Board L	6-3
6.4	Plates	6-3
6.4.1	Plate FR (△)	6-3
6.4.2	Plate FL (△)	6-3
6.4.3	Plate BR (△)	6-4
6.4.4	Plate BL (△)	6-4
6.5	Sensor 1	6-4
6.5.1	Sensor 1R	6-4
6.5.2	Sensor 1L	6-5
6.6	Frames	6-5
6.6.1	Frame R (△)	6-5
6.6.2	Frame L (△)	6-5
6.7	PD motors	6-5
6.7.1	PD motor R	6-5
6.7.2	PD motor L	6-6
6.8	CON motors	6-6
6.8.1	CON motor R	6-6
6.8.2	CON motor L	6-6
6.9	PI sensor boards	6-7
6.9.1	CON sensor	6-7

	Page
6.9.1.1 CON sensor of the upper brace R	6-7
6.9.1.2 CON sensor of the upper brace L	6-7
6.9.2 PD sensors	6-8
6.9.2.1 PD sensor of the upper brace R	6-8
6.9.2.2 PD sensor of the upper brace L	6-8
6.10 Motors and sensors of frame R	6-9
6.10.1 Motor SCA	6-9
6.10.1.1 Motor for the S2 disk	6-9
6.10.1.2 Motor for the C2 disk	6-9
6.10.1.3 Motor for the S1 disk	6-10
6.10.1.4 Motor for the A1 disk (△)	6-10
6.10.1.5 Motor for the C1 disk (△)	6-11
6.10.1.6 Motor for the A2 disk (△)	6-11
6.10.2 Motor PCA	6-12
6.10.2.1 Motor for the CA disk (△)	6-12
6.10.2.2 Motor for the P1 disk (△)	6-12
6.10.2.3 Motor for the P2 disk (△)	6-12
6.10.3 Sensor 2	6-13
6.10.3.1 Sensor for the CA disk	6-13
6.10.3.2 Sensor for the P1 disk	6-13
6.10.3.3 Sensor for the P2 disk	6-13
6.11 Motors or sensors of frame L	6-14
6.11.1 Motor SCA	6-14
6.11.1.1 Motor for the S2 disk	6-14
6.11.1.2 Motor for the C2 disk	6-14
6.11.1.3 Motor for the S1 disk	6-15
6.11.1.4 Motor for the A1 disk (△)	6-15
6.11.1.5 Motor for the C1 disk (△)	6-16
6.11.1.6 Motor for the A2 disk (△)	6-16
6.11.2 Motor for the CA disk	6-17
6.11.2.1 Motor for the CA disk (△)	6-17
6.11.2.2 Motor for the P1 disk (△)	6-17
6.11.2.3 Motor for the P2 disk (△)	6-17
6.11.3 Sensor 2	6-18
6.11.3.1 Motor for the CA disk (△)	6-18
6.11.3.2 Motor for the P1 disk (△)	6-18
6.11.3.3 Motor for the P2 disk (△)	6-18
6.12 VD LED unit	6-19
6.12.1 VD LED unit of frame R	6-19
6.12.2 VD LED unit of frame L	6-19
6.13 L motor CPU board	6-20
6.14 L motor driver board	6-20
6.15 R motor CPU board	6-20

6.16 R motor driver board	6-20
6.17 MB main board	6-21
6.18 LCD AS	6-21
6.19 CB main board	6-22
6.20 Key I/F board	6-22
6.21 Link board	6-23
6.22 Rotary encoder	6-23
6.23 LCD I/F board	6-24
6.24 Inverter	6-24
6.25 Color LCD module	6-25
6.26 RB main board	6-26
6.27 RB I/F board	6-26

§7	ADJUSTMENT	7-1
7.1	Entering the Information/Adjustment screen	7-1
7.2	Adjustment mode of the MB	7-1
7.2.1	Adjustment of the initial pulse for the MB	7-1
7.2.2	Lens cleaning mode	7-2
7.2.3	Adjustment mode for gear	7-2
7.3	Chart selection	7-3
7.4	Chart adjustment	7-3
7.5	Mirror adjustment	7-3
7.6	Parameter setting	7-4
7.7	Printing the adjustment value	7-4
7.8	Resetting the setup data	7-4
7.9	Communication setting with other brand AR/LM	7-5
7.10	Adjusting the clock	7-5
7.11	Updating the software	7-6
7.12	Clearing the AR/LM data	7-6
7.13	Touch-screen panel calibration	7-7

§8	REFERENCE	8-1
8.1	Wiring diagram	8-1
8.2	Connector cables	8-2
8.3	Error messages	8-5
8.4	Parameters	8-6

§1 INTRODUCTION

- This service manual provides information for after-sales service for the NIDEK refractor, model: RT-5100.
- Refer to the RT-5100 Operator's Manual and Parts List.
- Specifications are subject to change without notice for improvement. Refer to the Technical Bulletins (T.B.) for important changes.
- In case the device cannot be repaired according to the procedures described in this manual, please report the serial number and details of the symptom or symptoms.

§2 SAFETY PRECAUTIONS

<General precautions>

- Only the service persons who are accustomed to using tools, and have a deep knowledge of this instrument are allowed to repair the instrument.
- Proceed right work in accordance with the procedure.
If not, accidents or failure of the instrument may result.
- When performing maintenance works, turn off the power switch, and disconnect the power cord from the wall outlet unless necessary.
- Never wipe the covers, etc. using an organic solvent such as a paint thinner.
The surface may be ruined, and as a result, the appearance of the instrument will be impaired.

<Maintenance precautions>

- In case of instrument malfunction, turn the power switch off after checking the symptom.
- Never drop parts or screws inside the instrument, nor bump it against the surrounding objects.
- Have storage cases ready to ensure the loss of the removed screws or parts.
- In screwing or unscrewing, use a proper tool for the screw
- After loosening the screws fixed by a thread-locking adhesive, and tightening them again, be sure to apply the thread-locking adhesive to them.
- After replacing parts, make sure that they are fixed securely before turning on the power.
- If you observe strange odors or smoke being emitted from the instrument, immediately turn off the instrument and locate the causes after disconnecting the power cord from the wall-outlet.

If the instrument is continuously powered under such abnormal conditions, a fire, electric shock or total loss of the instrument may result.

- Referring to “8.1 Wiring diagram” and “8.2 Connector cables”, check cables for the following:
 1. Connectors are connected securely.
 2. No contact failure occurs after re-connection of connectors.
 3. No failure in soldering

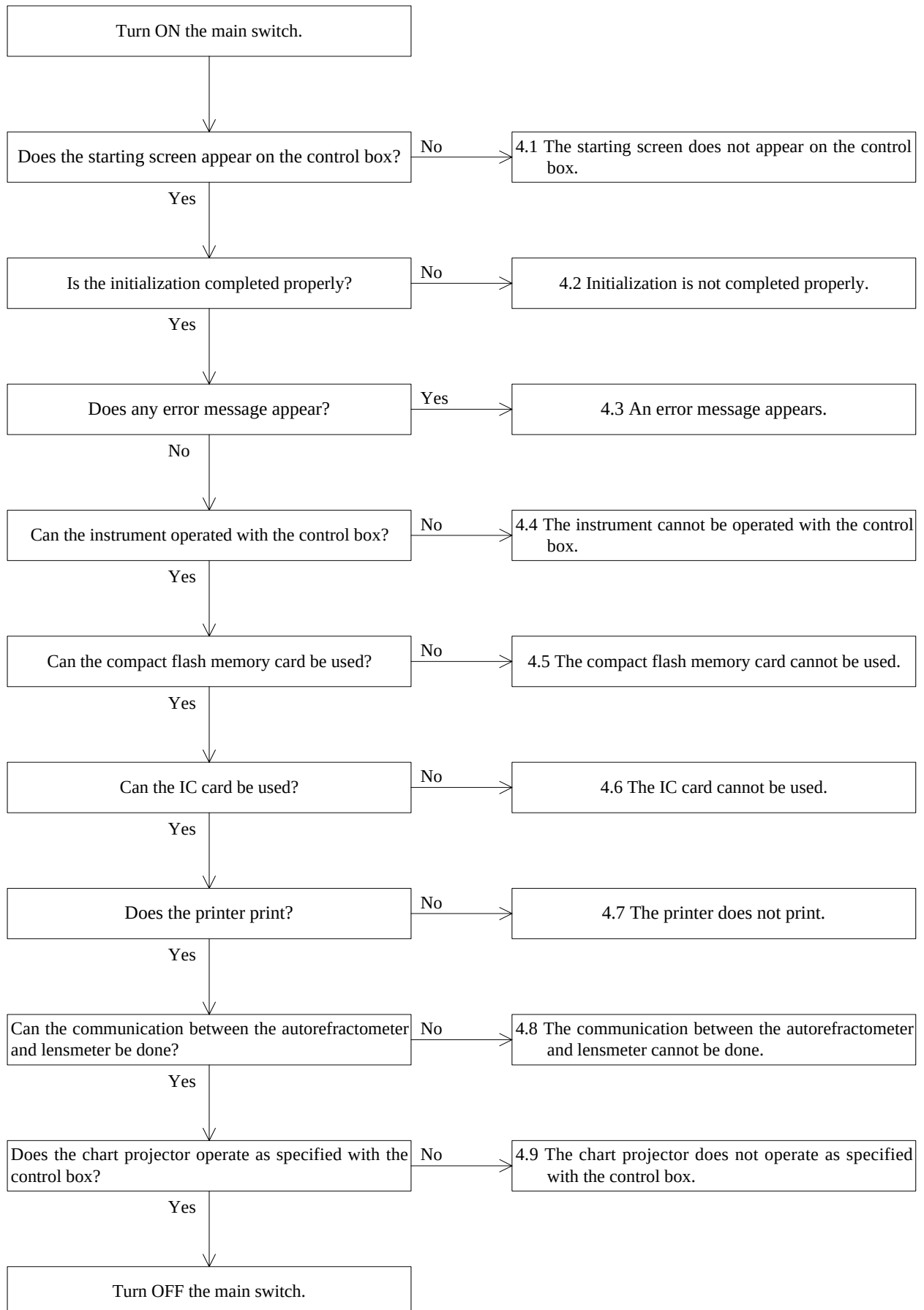
Do not pull the cables strongly. It may cause a breaking of wire.

Never work with wet hands. It may result in an electric shock or instrument malfunction.

<Adjustment precautions>

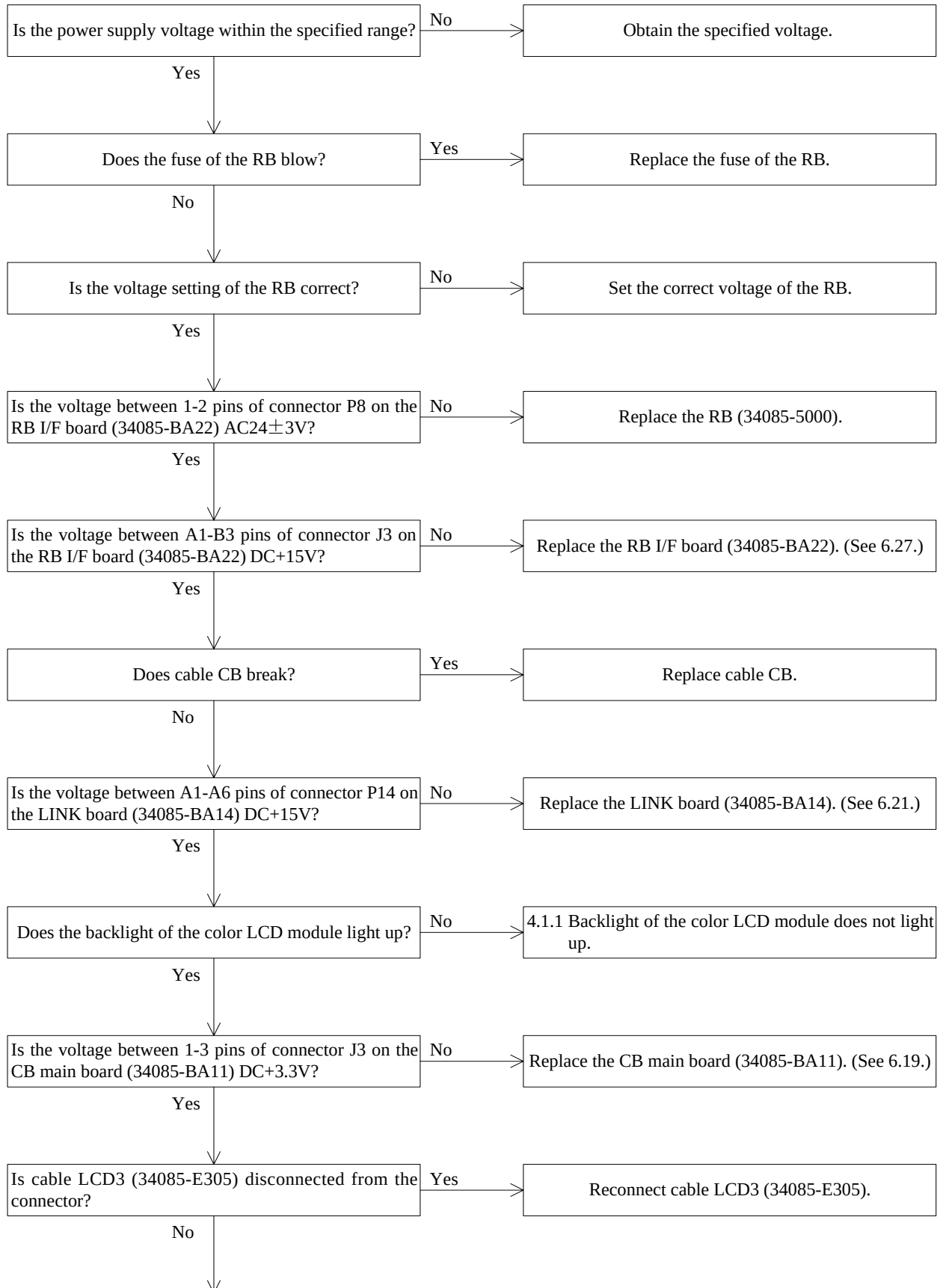
- Perform adjustment work in a vibration-free, flat and stable place.
Tilted floor or vibratory place may affect a proper adjustment adversely.
- Do not use an adjustment jig for other usage described in this manual.
- Be sure to readjust the optical axis of the prism and cylinder after performing the marked (△) procedures. The special jigs (the chart projector and the test scale for checking) are necessary for the readjustment.

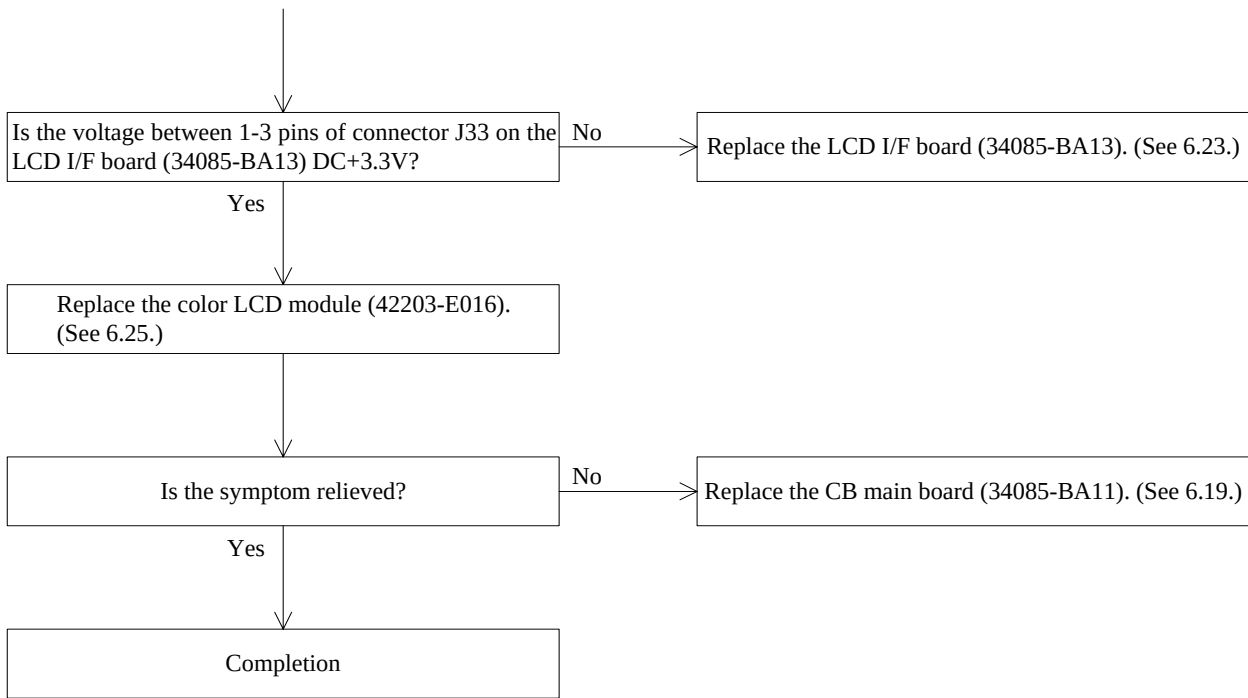
§3 TROUBLESHOOTING



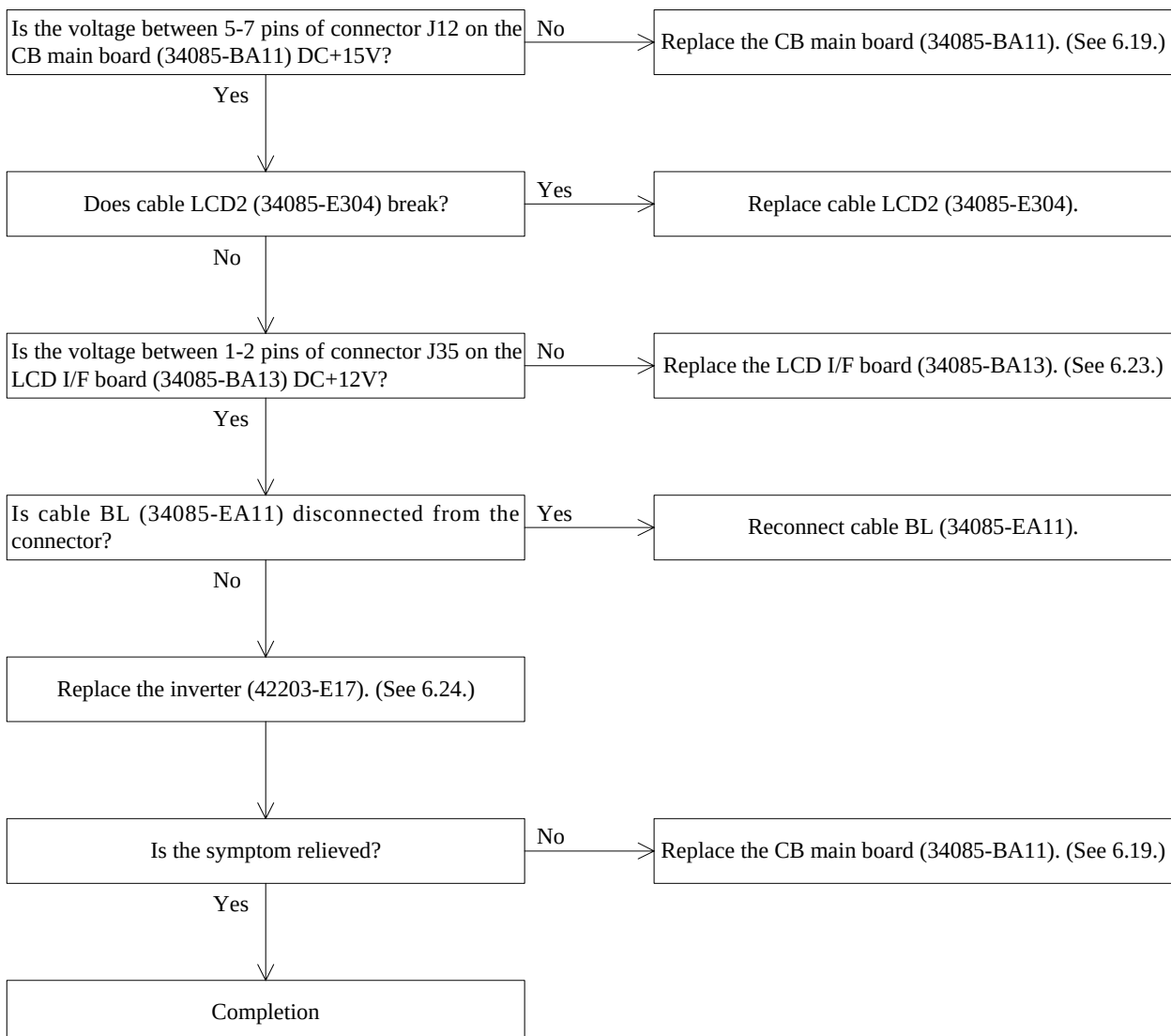
§4 SUB TROUBLESHOOTING

4.1 Initialization screen does not appear on the CB display.





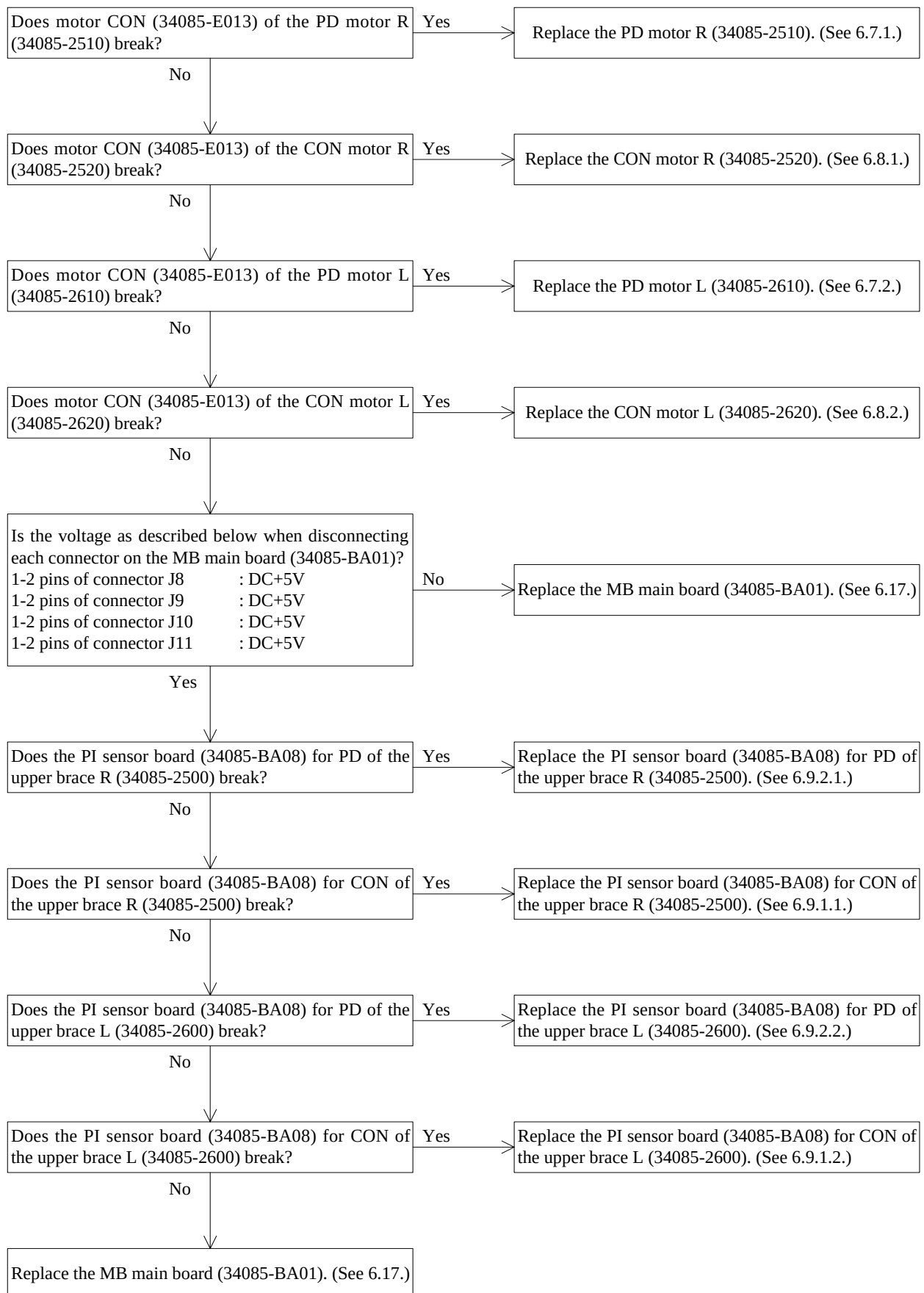
4.1.1 Backlight of the LCD module does not light up.



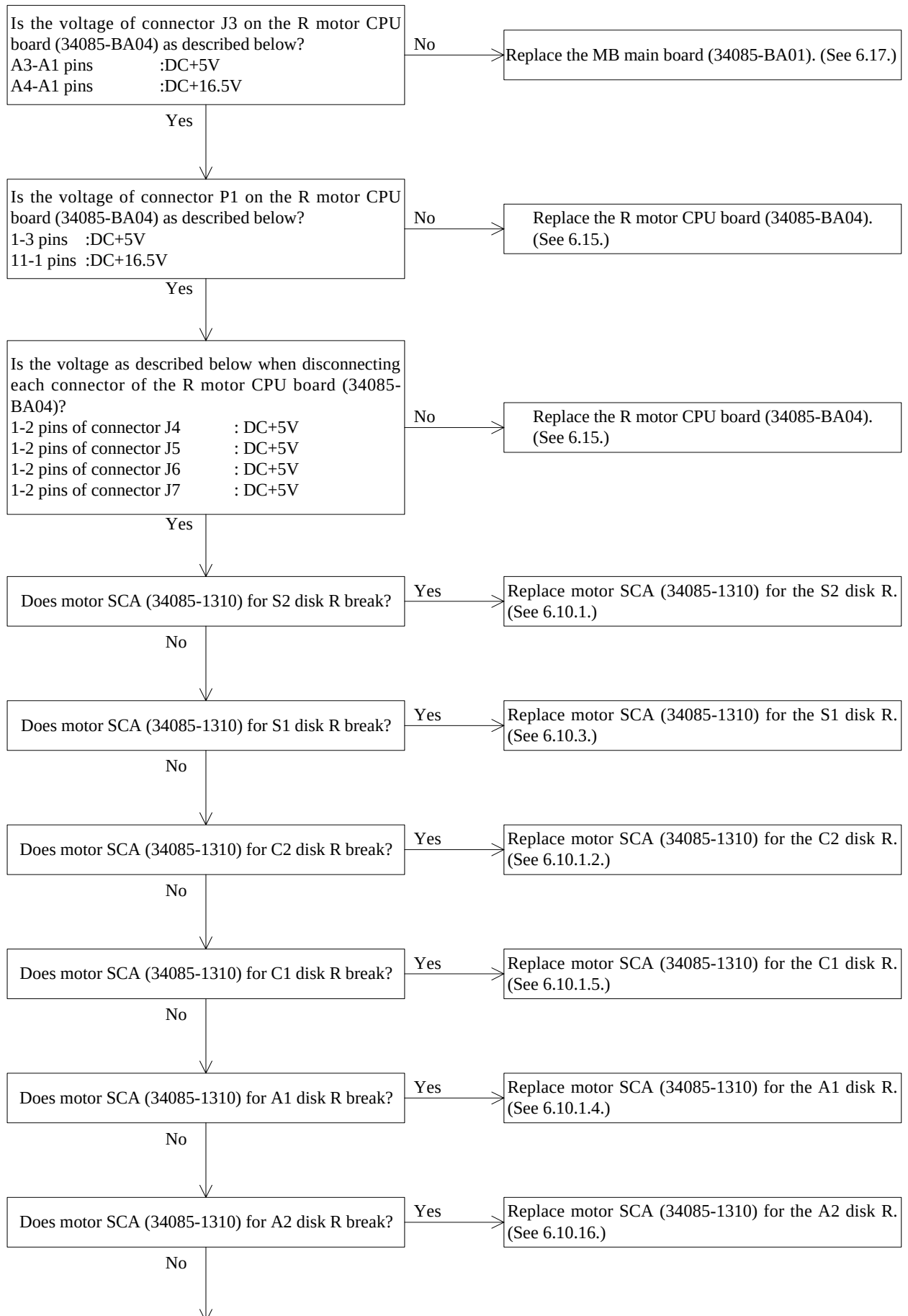
4.2 Initialization is not completed properly.

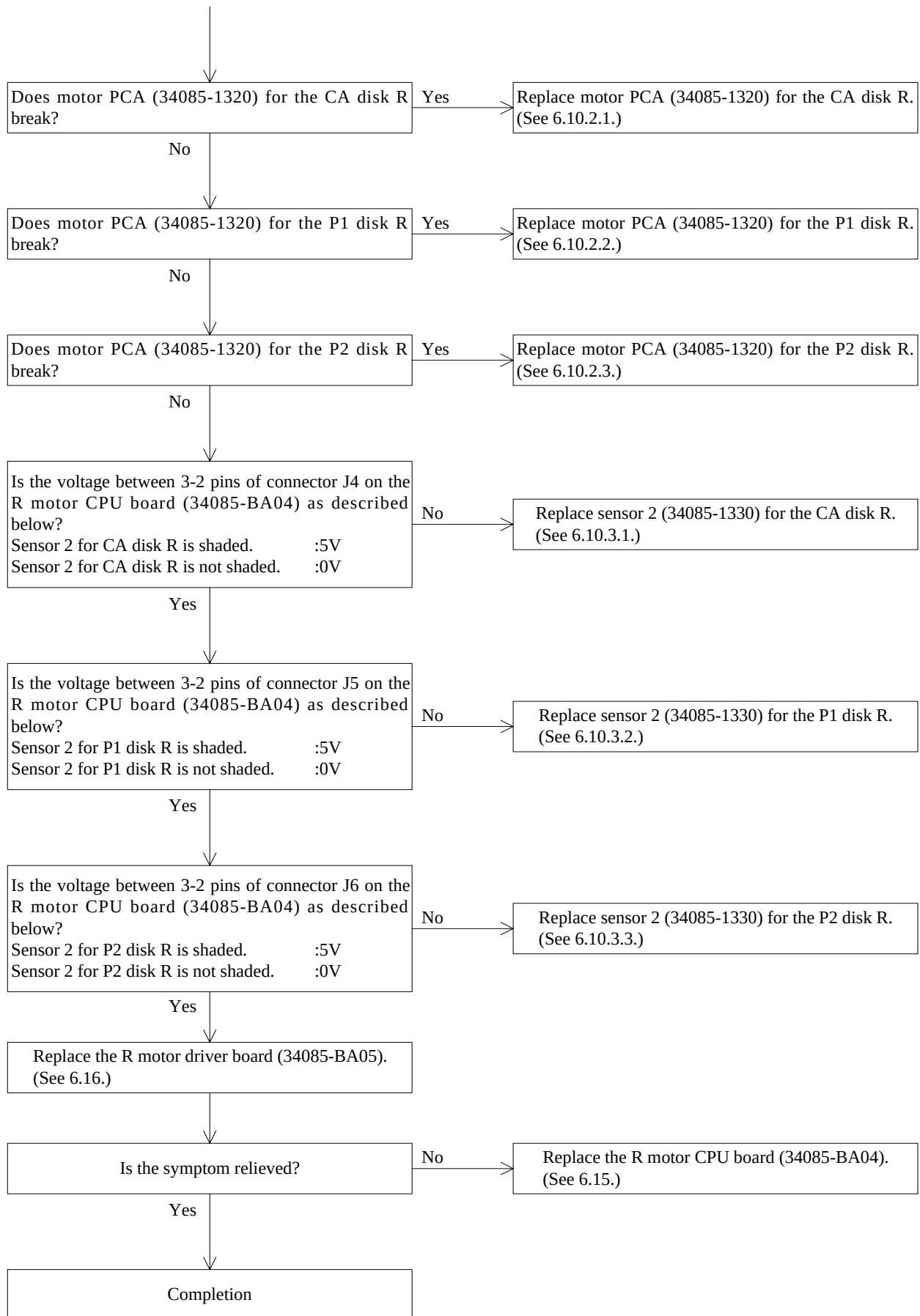


4.2.1 The battery AS does not move to the right and left.

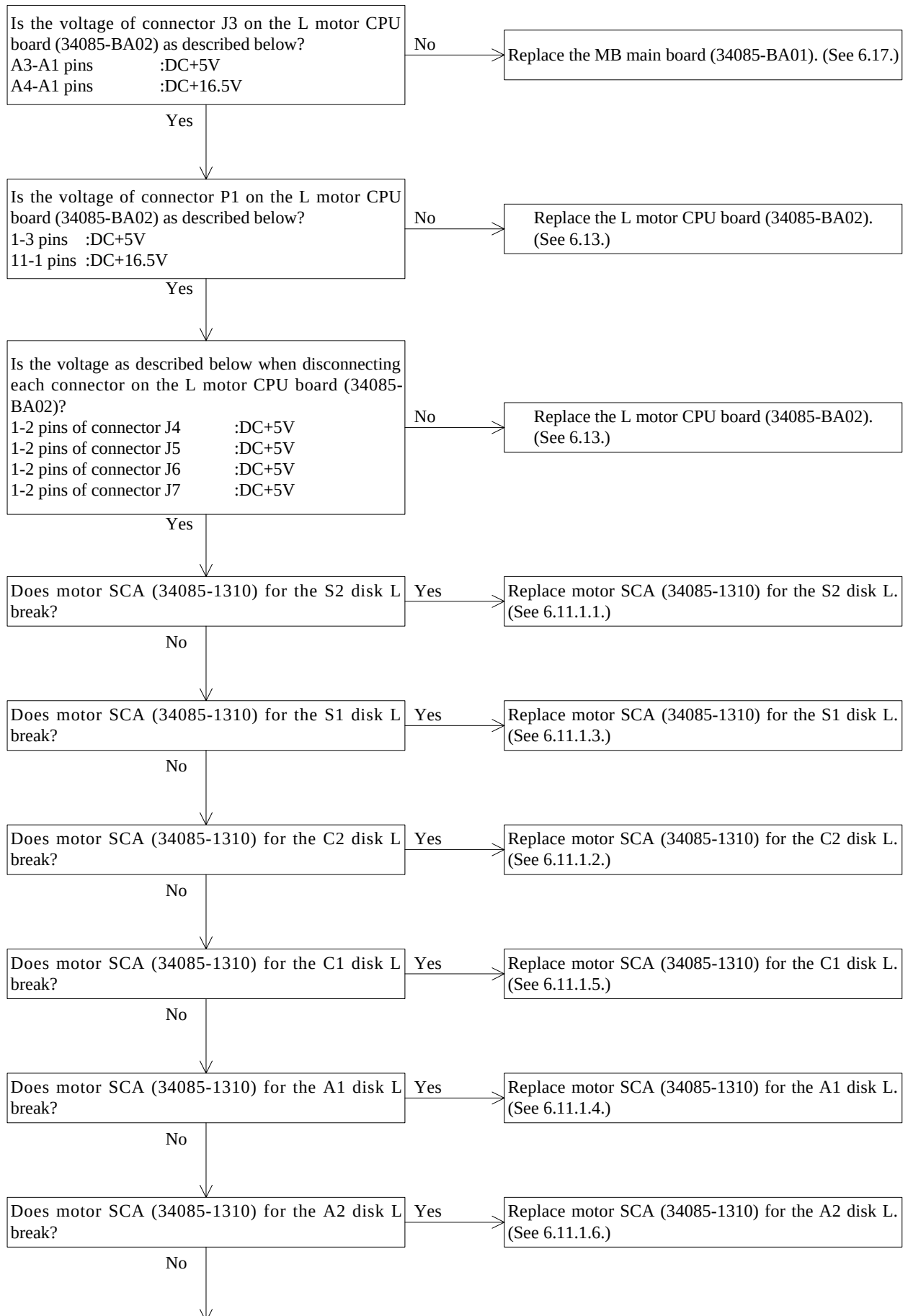


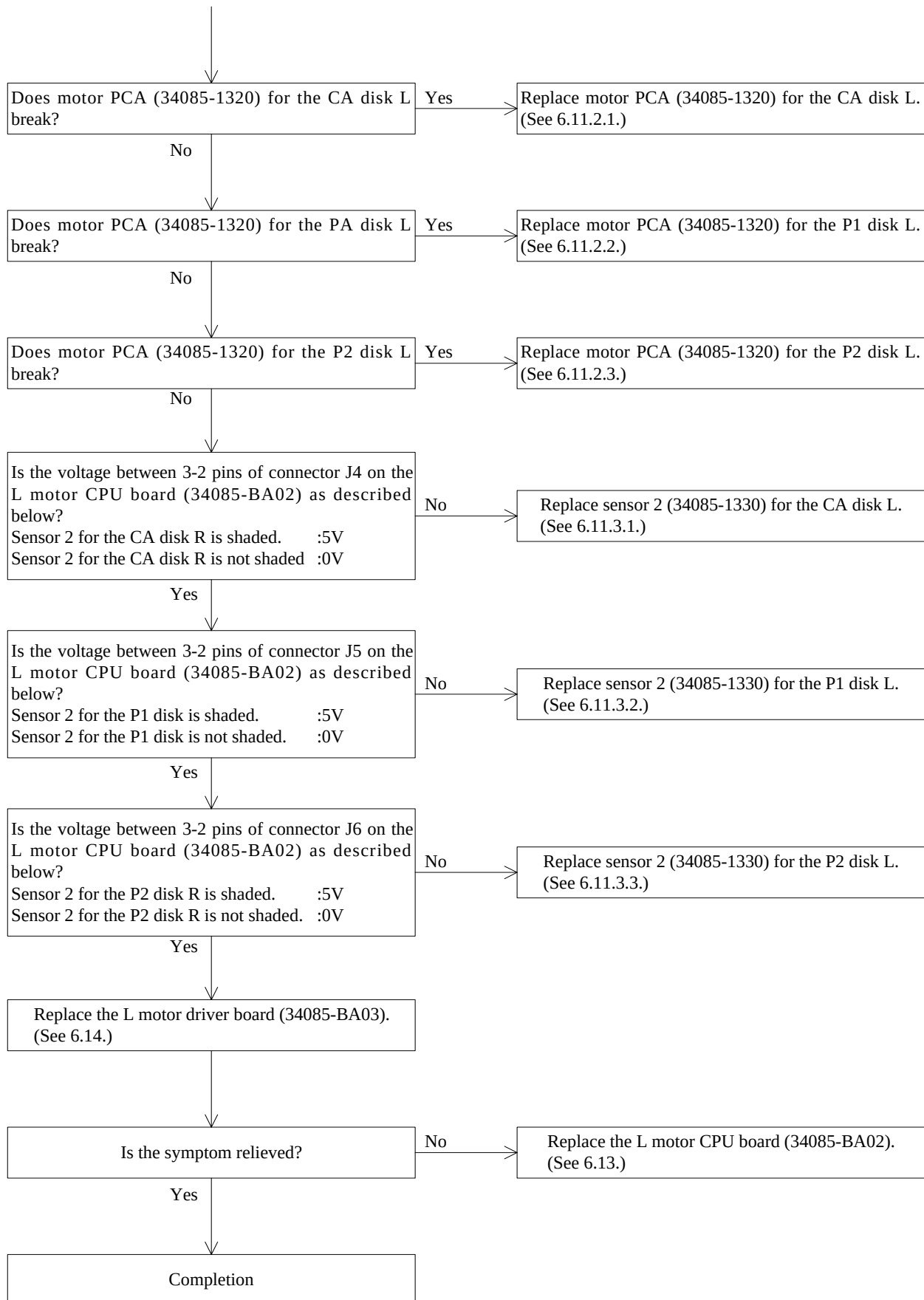
4.2.2 The R disk AS does not turn.



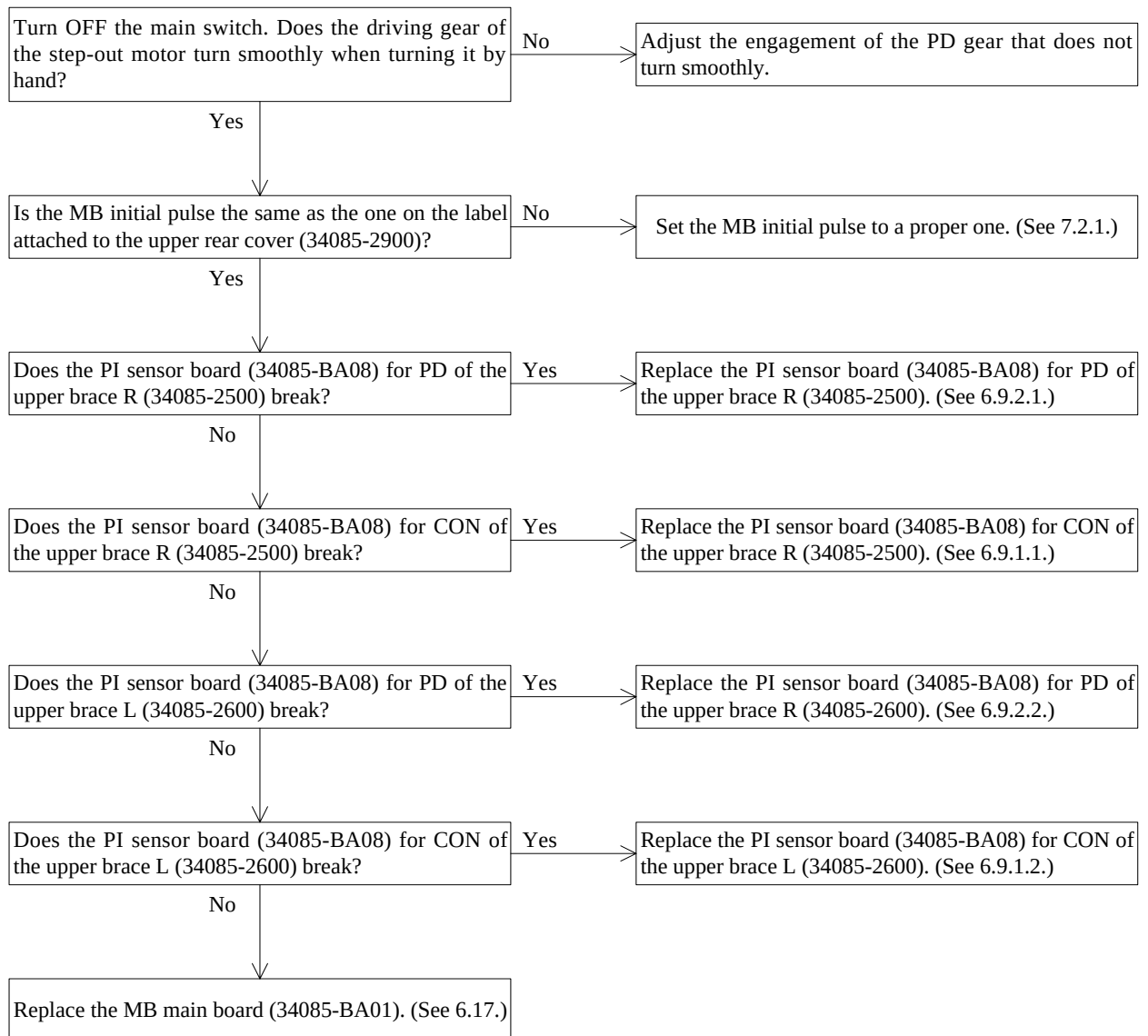


4.2.3 The L disk AS does not turn.

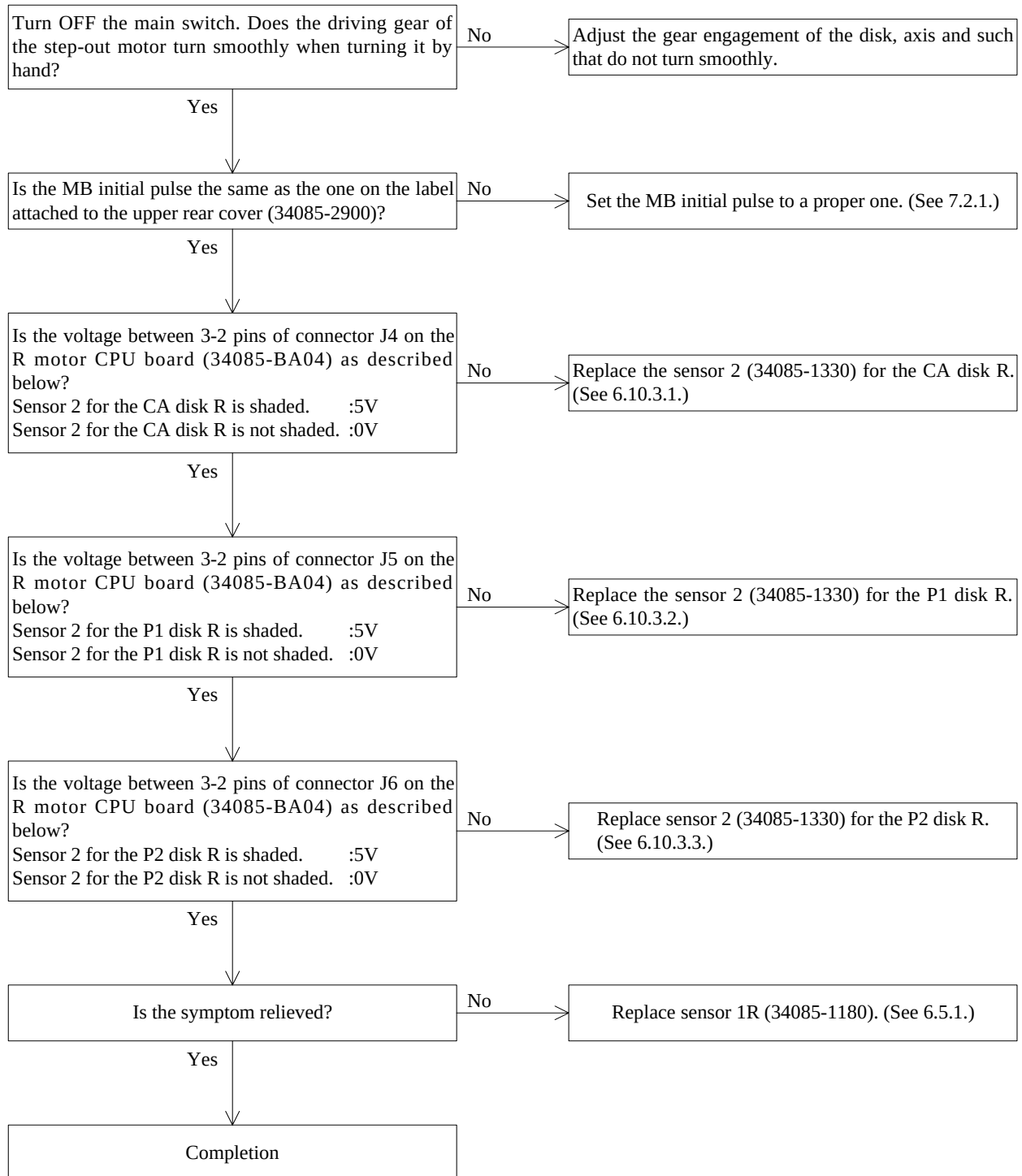




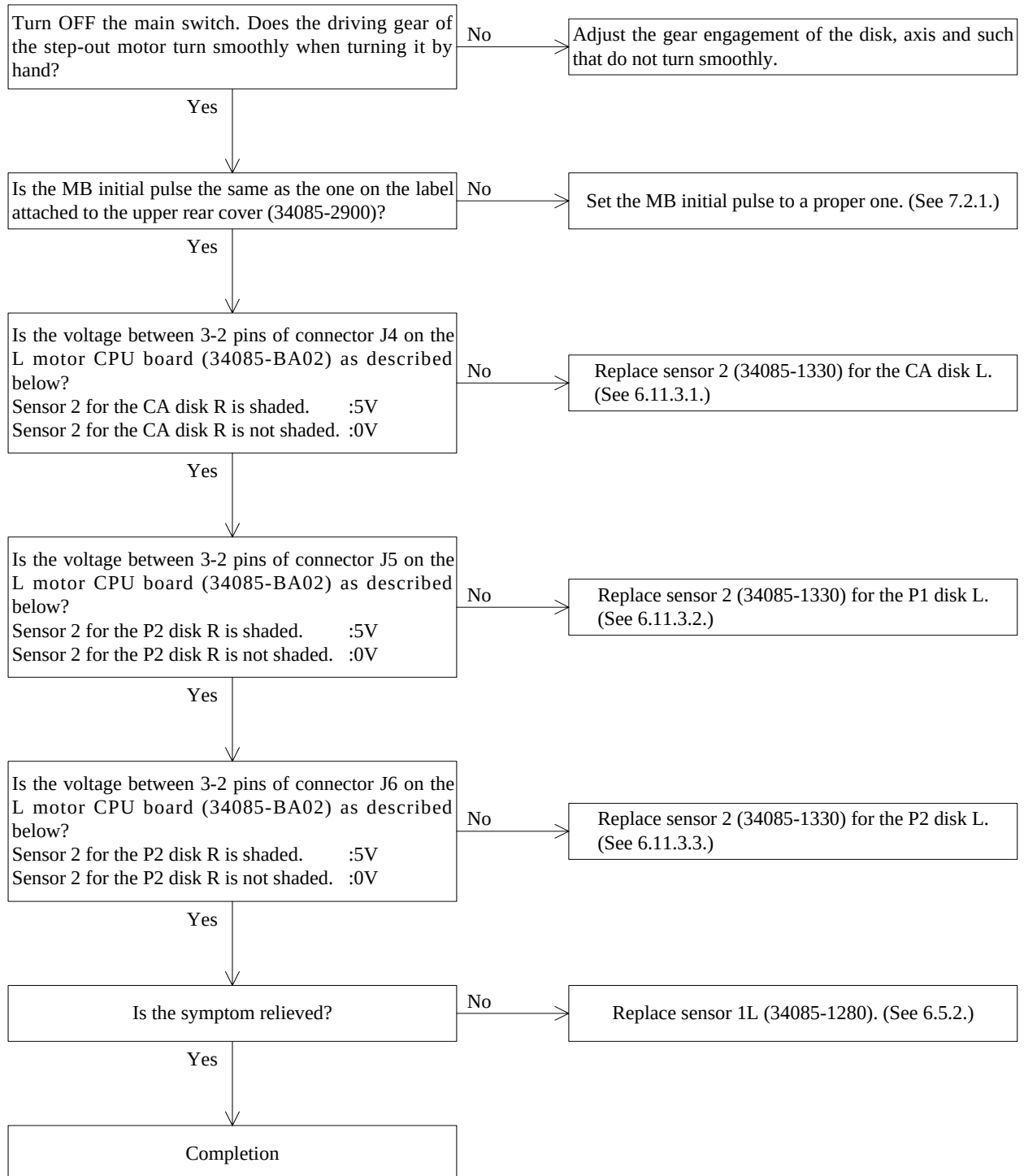
4.2.4 The PD and convergence of the MB is not initialized properly.



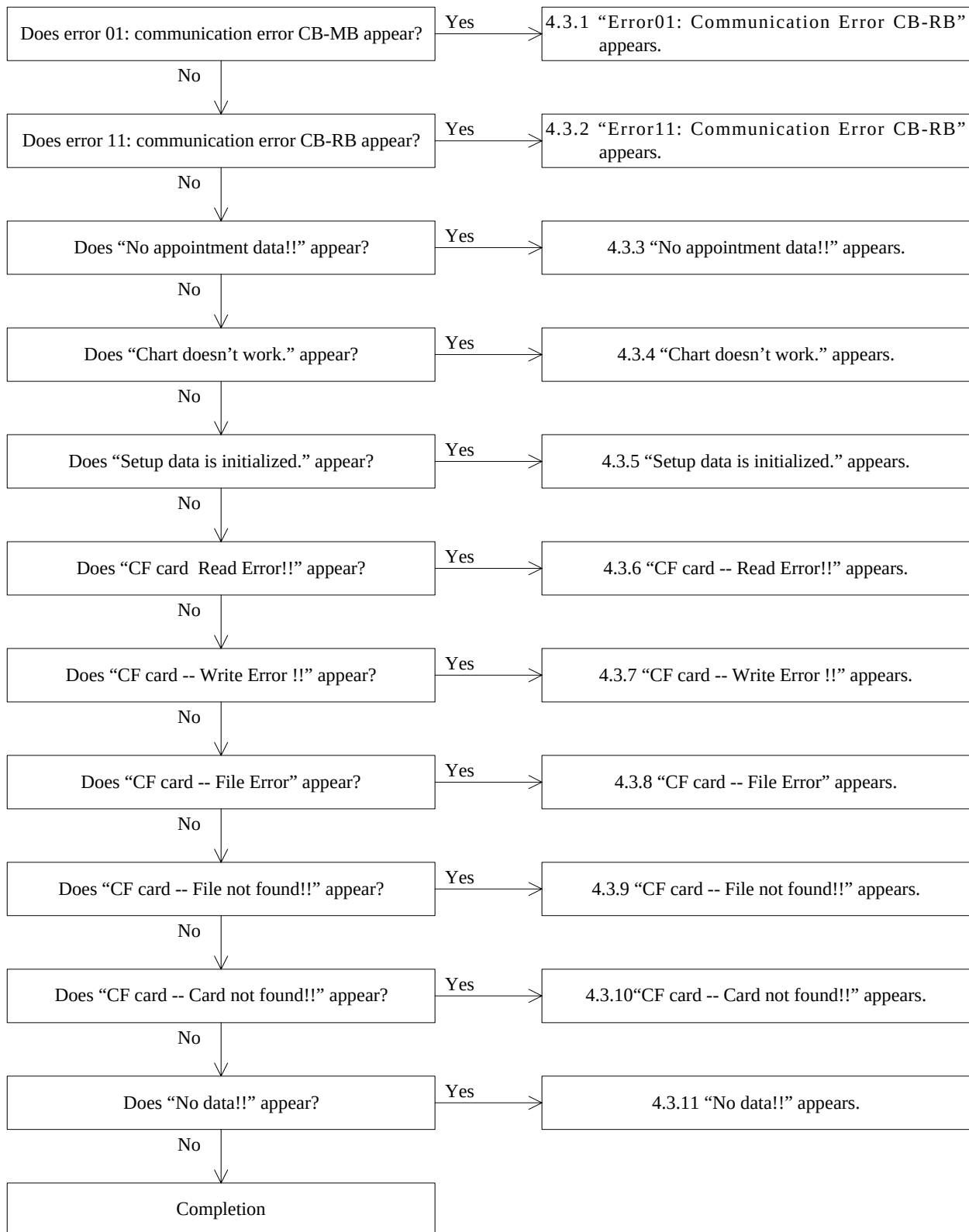
4.2.5 The right disk of the MB is not initialized properly.



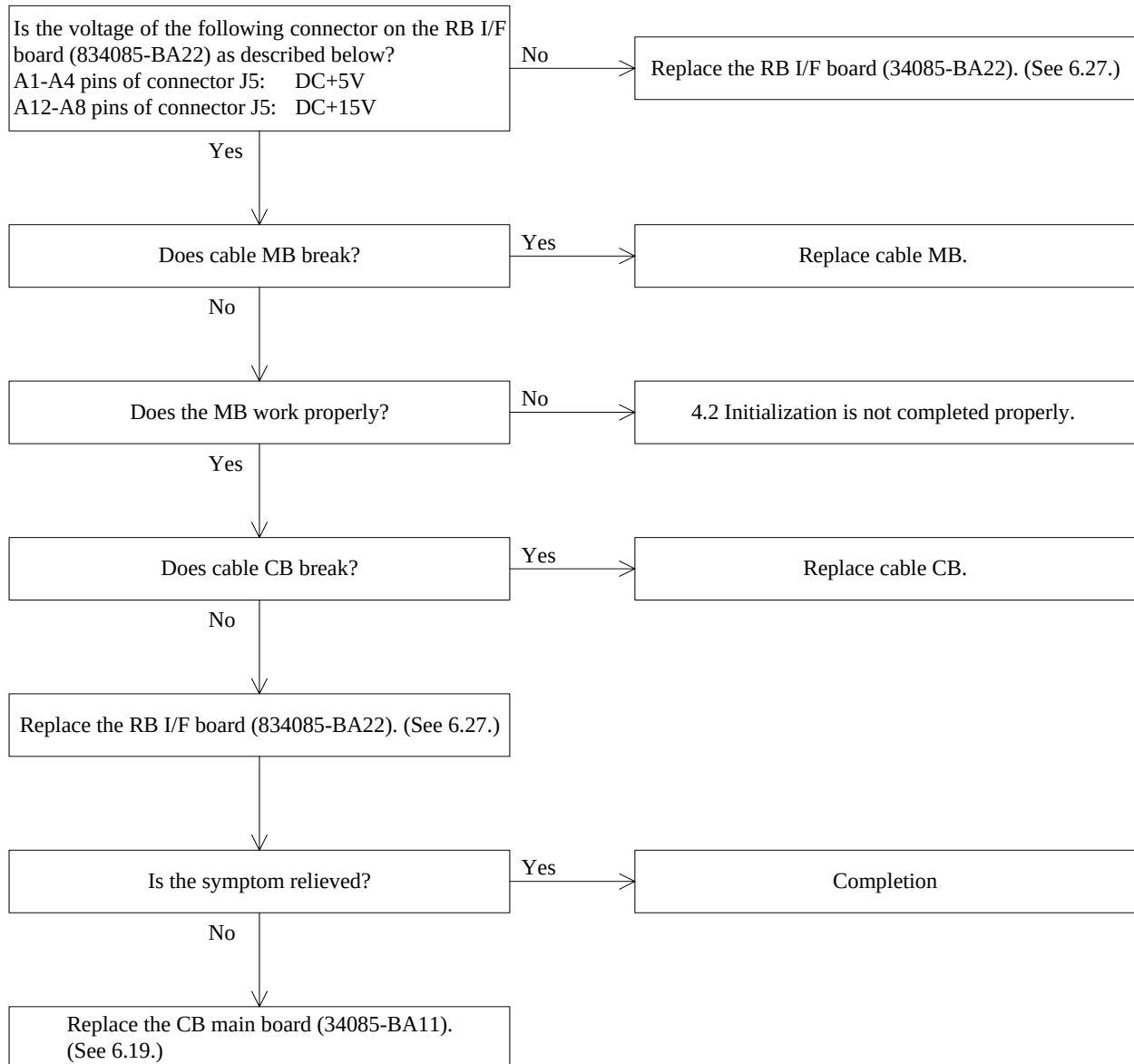
4.2.6 The left disk of the MB is not initialized properly.



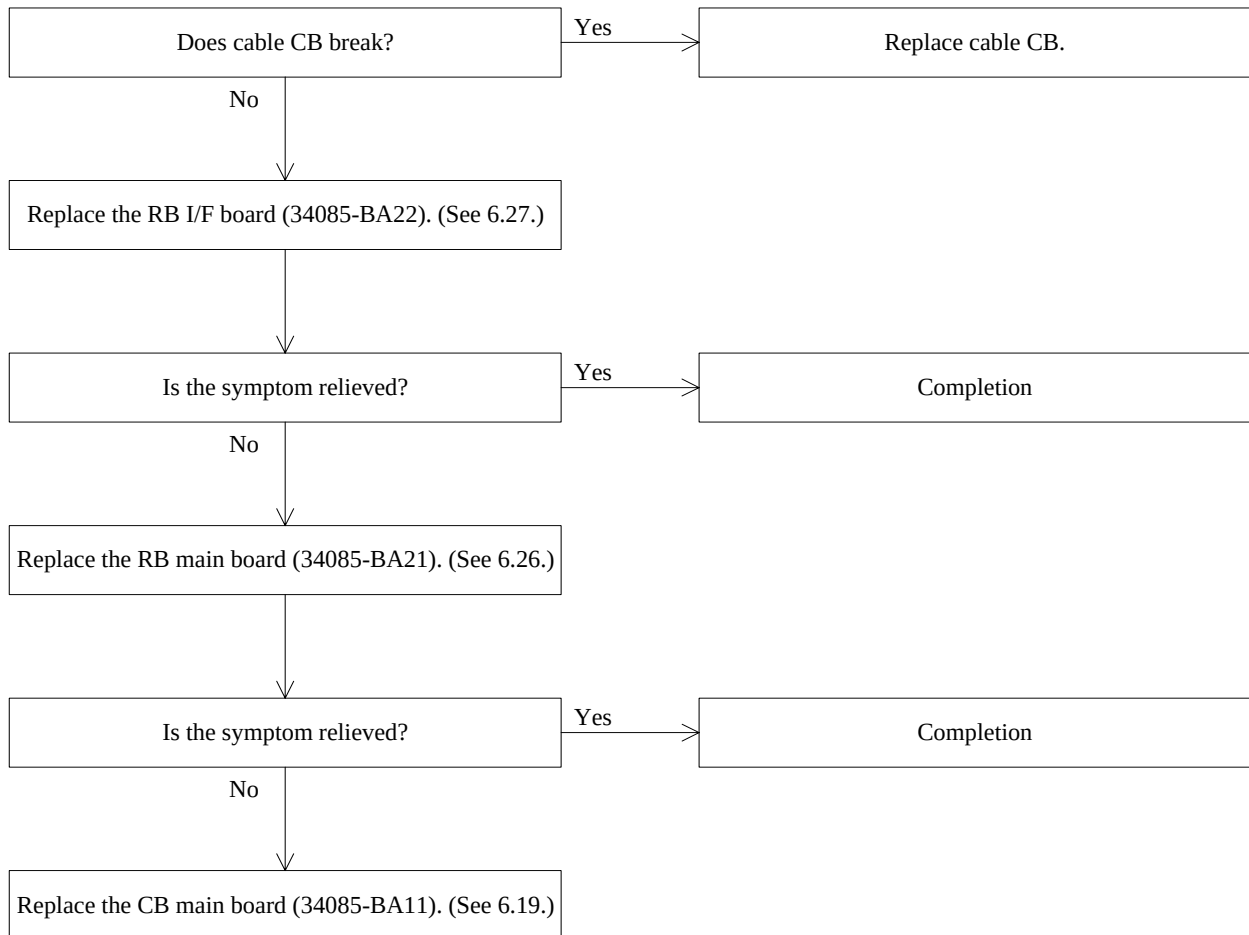
4.3 An error message appears.



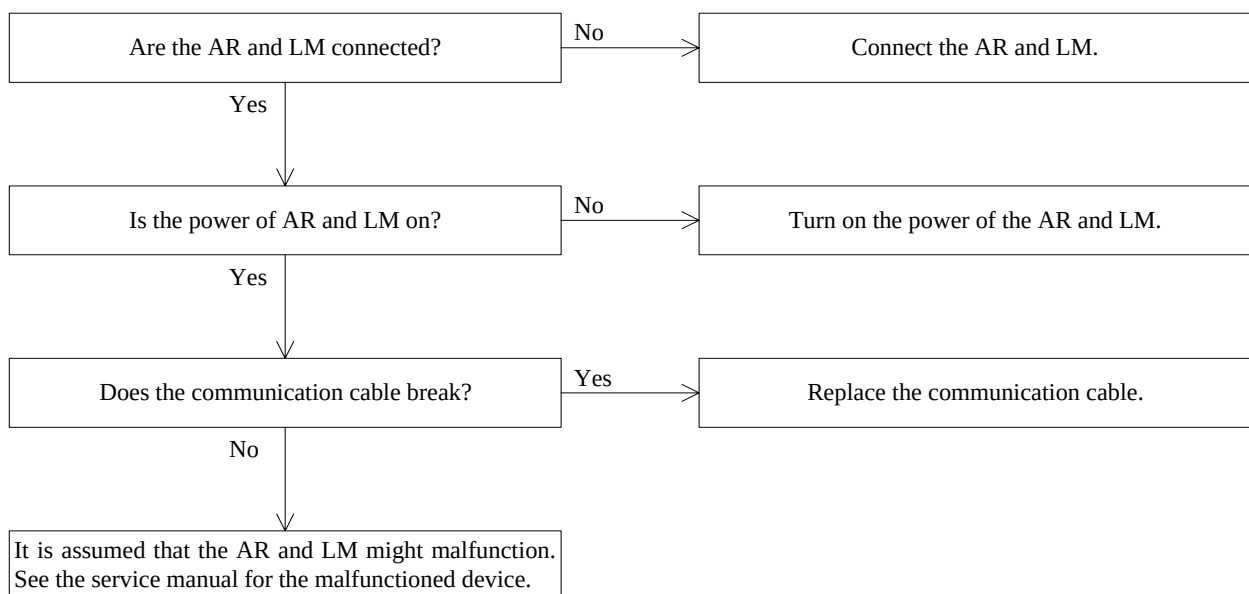
4.3.1 “Error 01: Communication Error CB-MB” appears.



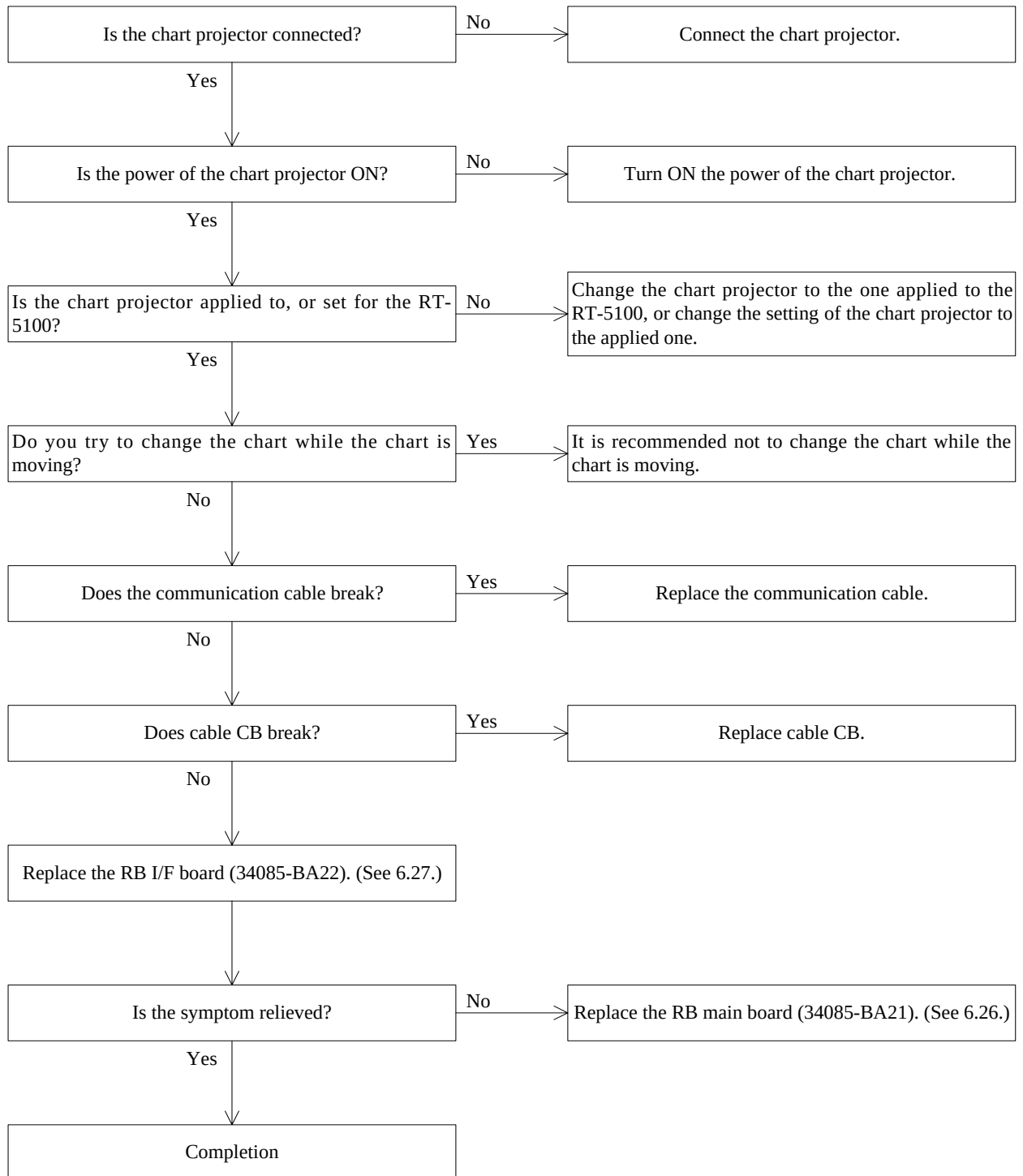
4.3.2 “Error 11: Communication Error CB-RB” appears.



4.3.3 “No appointment data!!” appears.

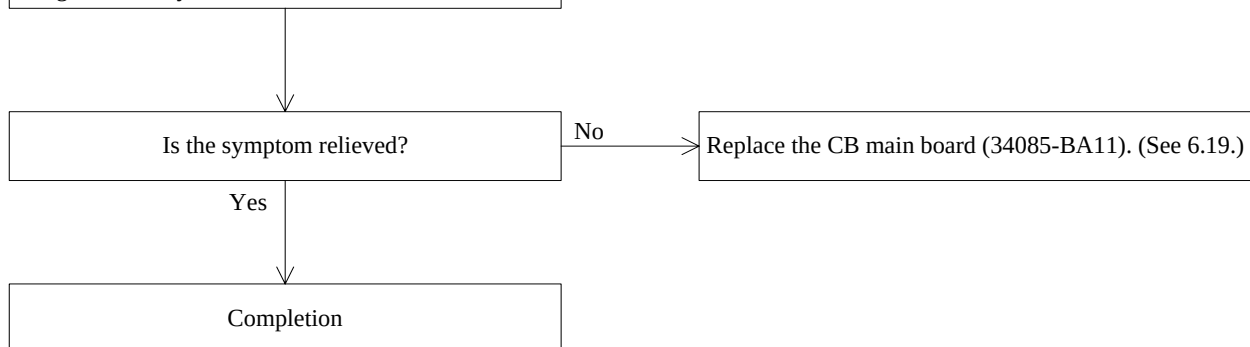


4.3.4 “Chart doesn’t work.” appears.

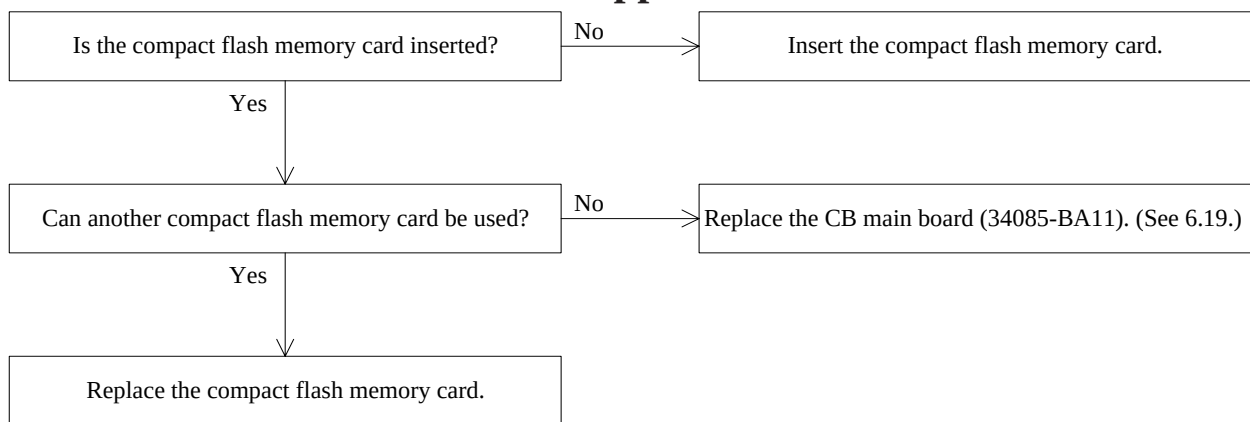


4.3.5 “Setup data is initialized.” appears.

Keep the power ON for approximately 8 hours to charge the battery in the control box.



4.3.6 “CF card -- Read Error!!” appears.



4.3.7 “CF card -- Write Error!!” appears.

Perform the procedures described in “4.3.6.”

4.3.8 “CF card -- File Error!!” appears.

It is assumed that the specified image file stored in the compact flash memory card might be broken. Check the file.

4.3.9 “CF card -- File not found!!” appears.

The specified image file may not be stored in the compact flash memory card. Check the file.

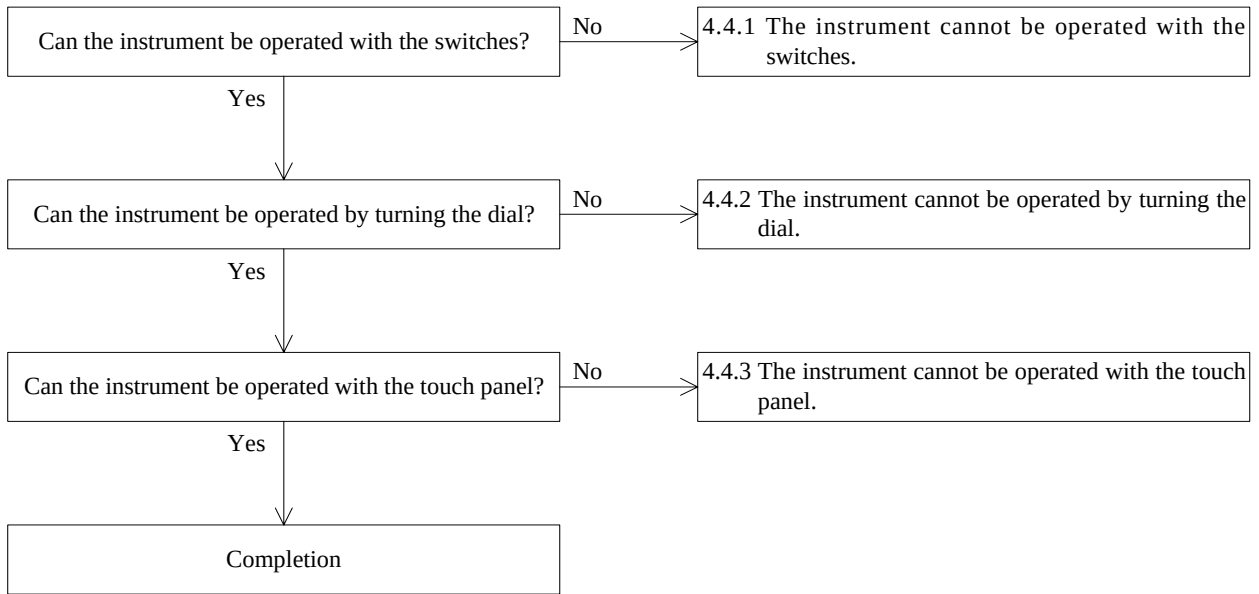
4.3.10 “CF card -- Card not found!!” appears.

Insert the compact flash memory card.

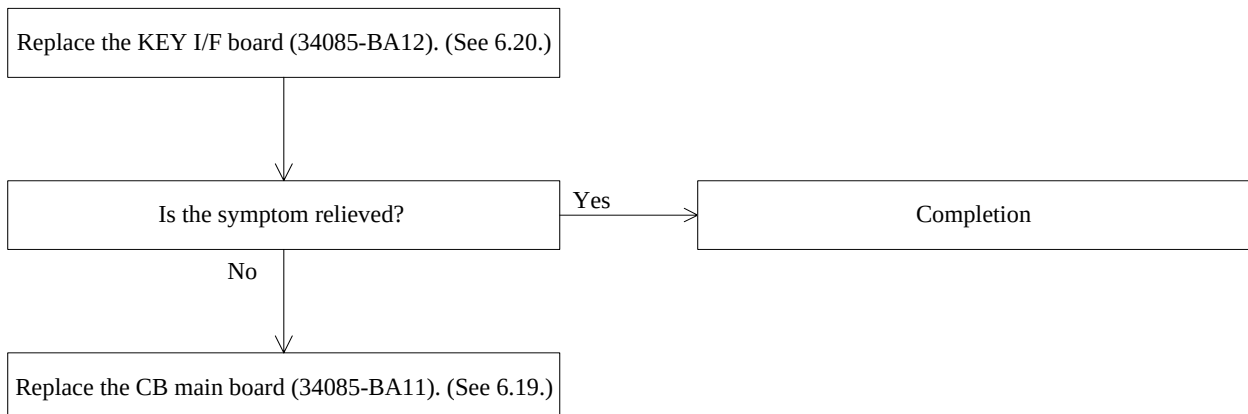
4.3.11 “No data!!” appears.

Check the IC card and data in the IC card.

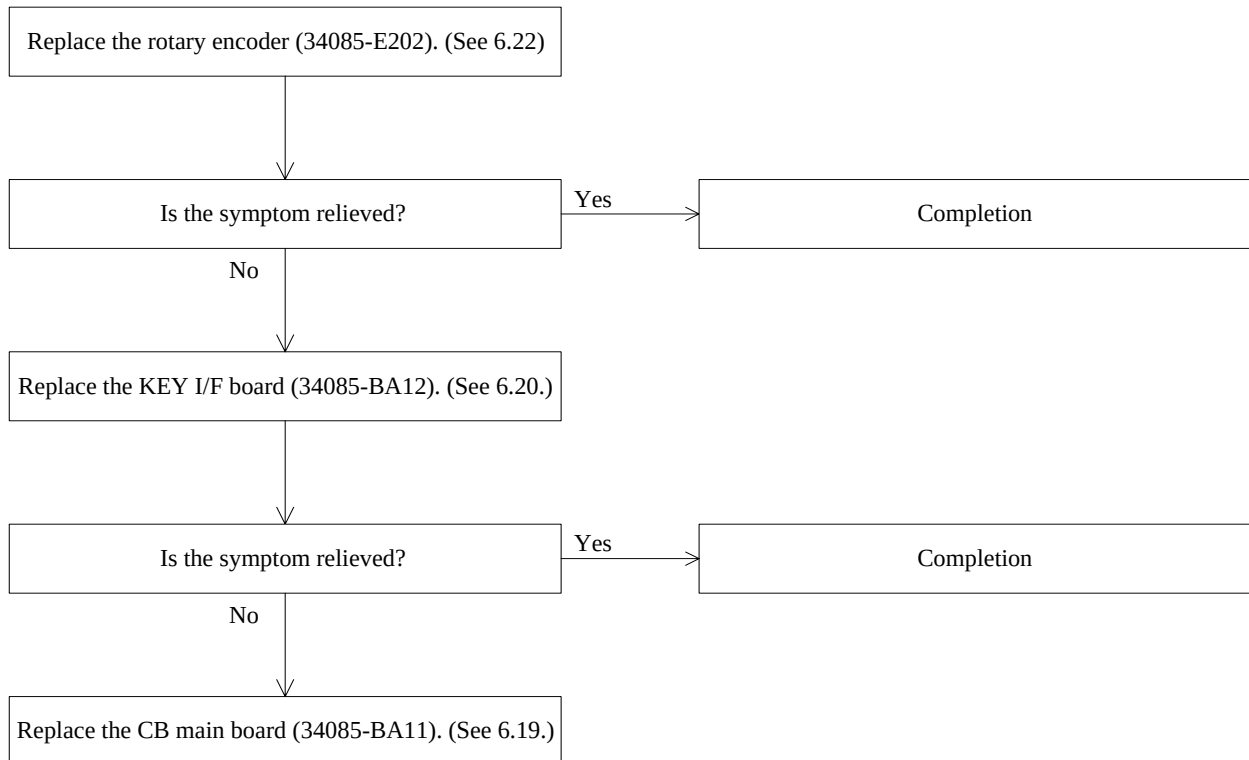
4.4 The instrument cannot be operated with the control box.



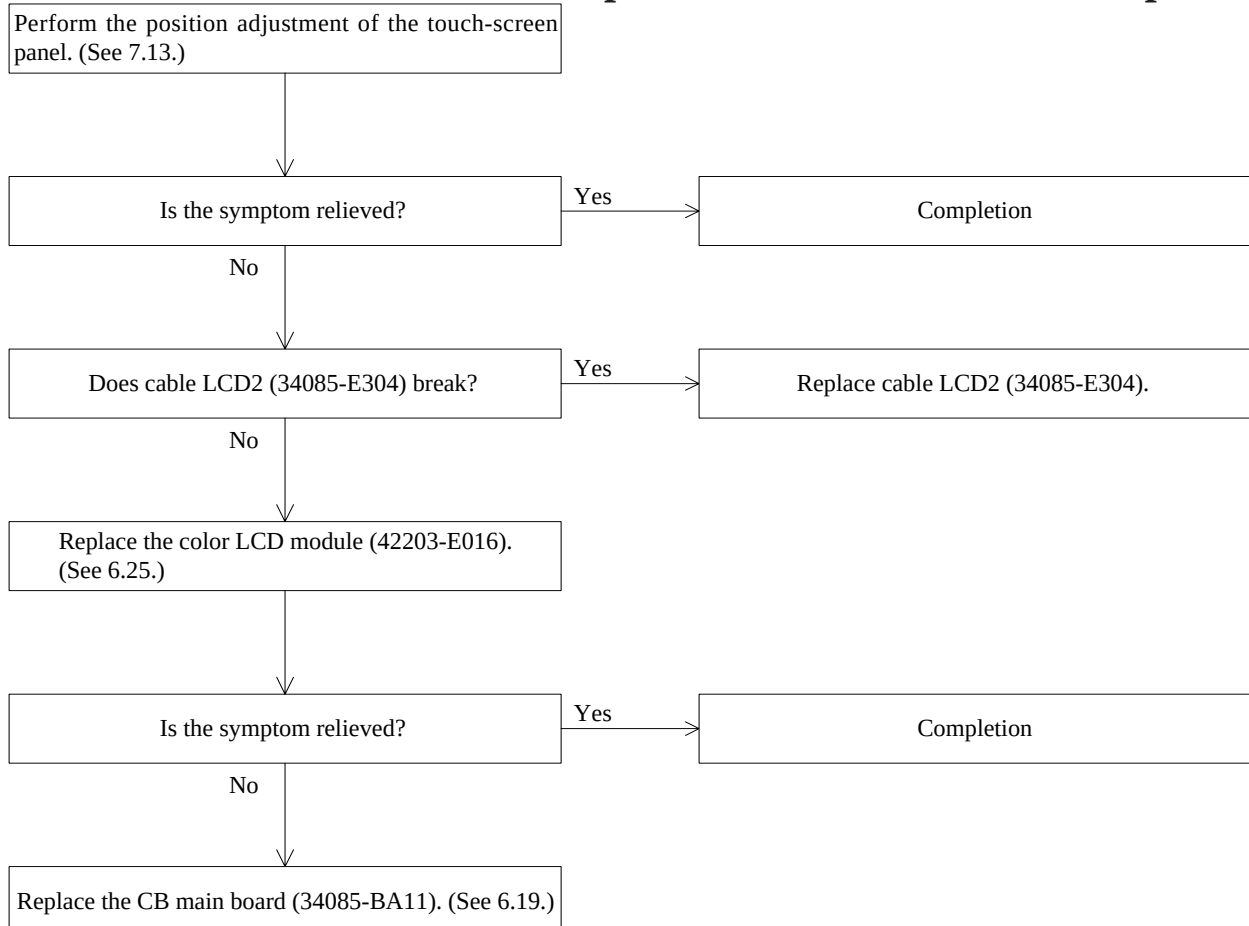
4.4.1 The instrument cannot be operated with the switches.



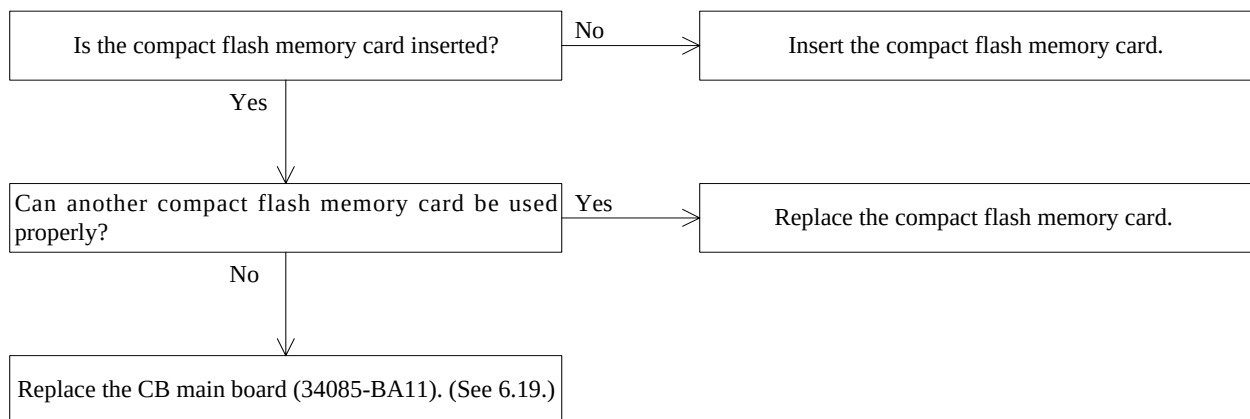
4.4.2 The instrument cannot be operated by turning the dial.



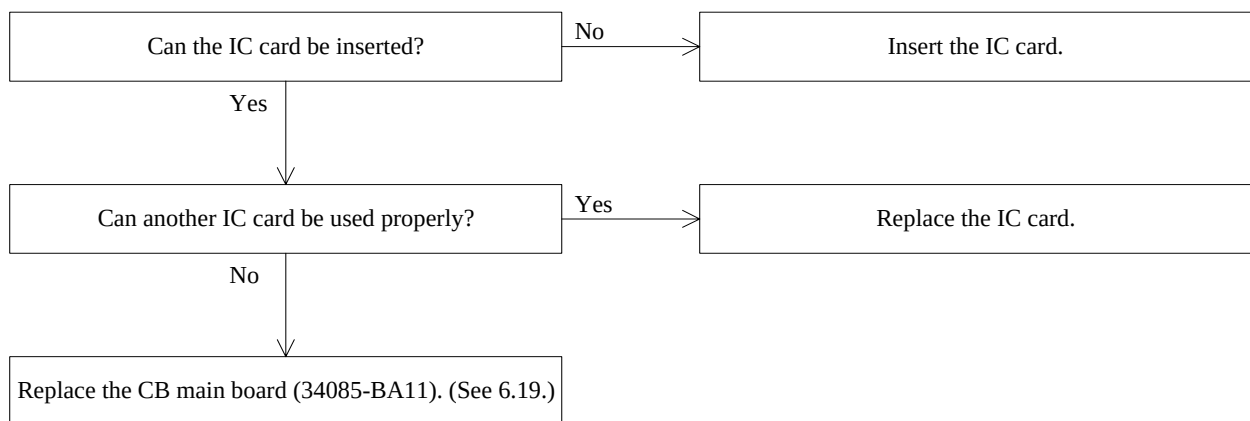
4.4.3 The instrument cannot be operated with the touch-screen panel.



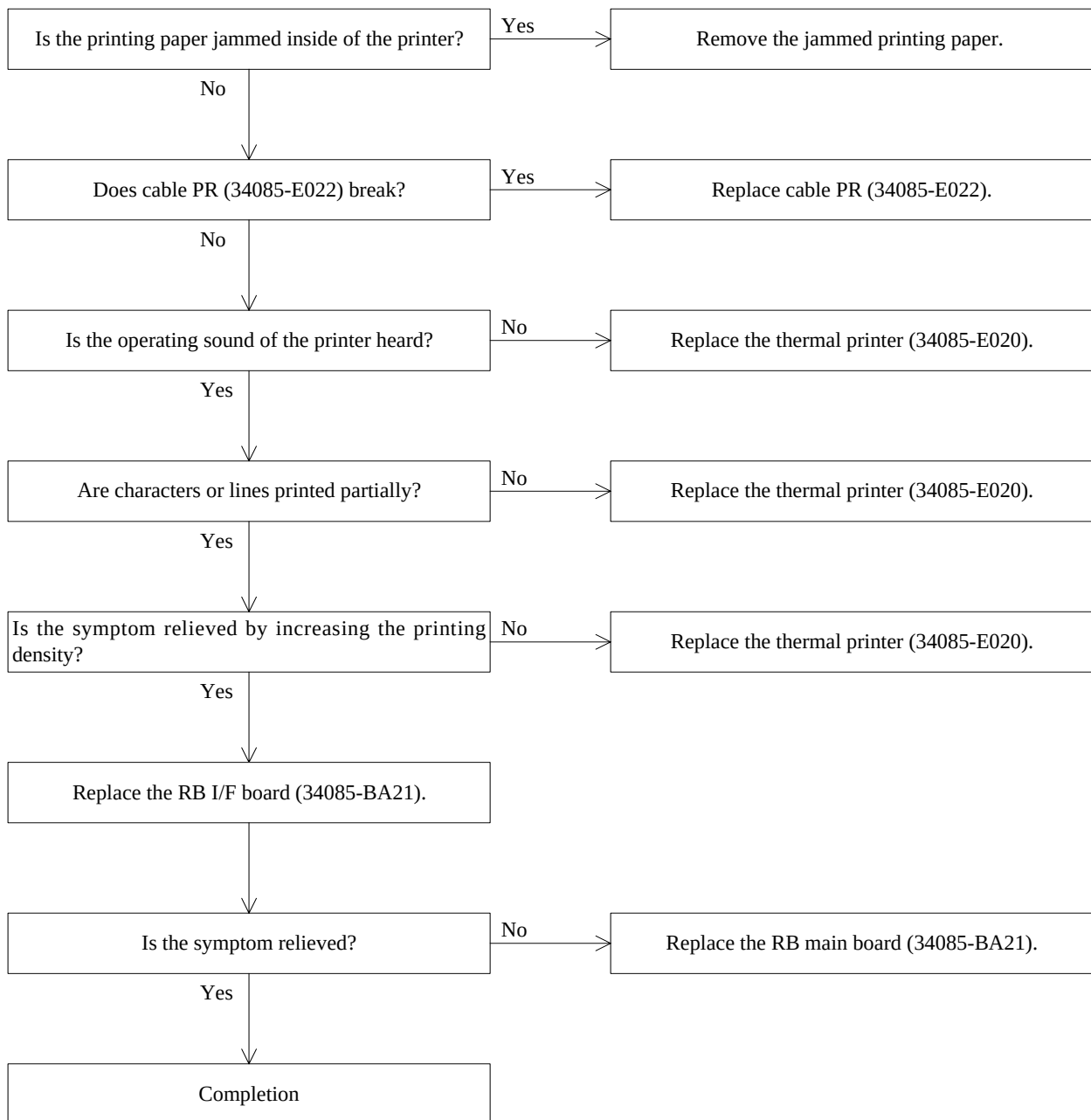
4.5 The compact flash memory card cannot be used.



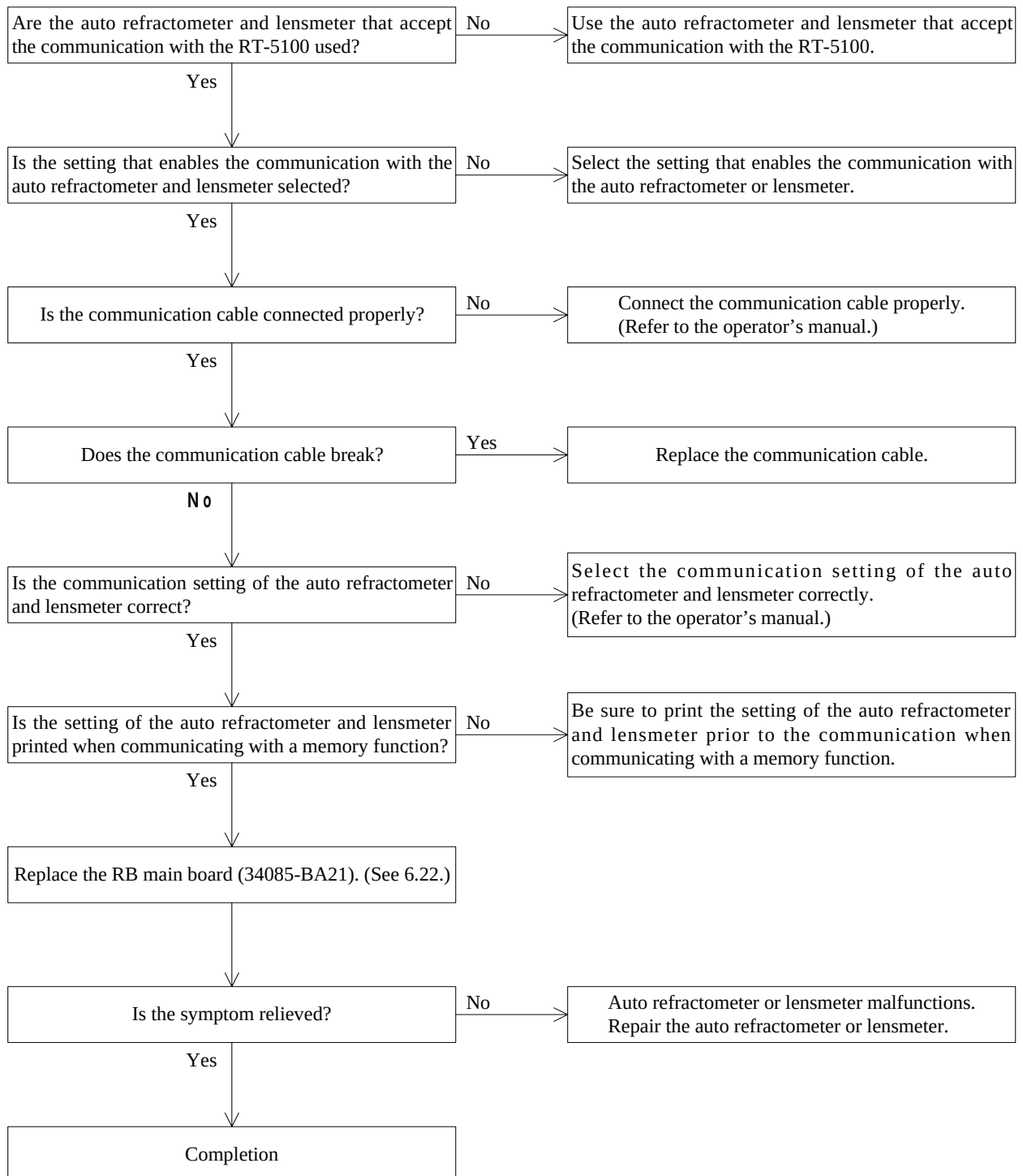
4.6 The IC card cannot be used.



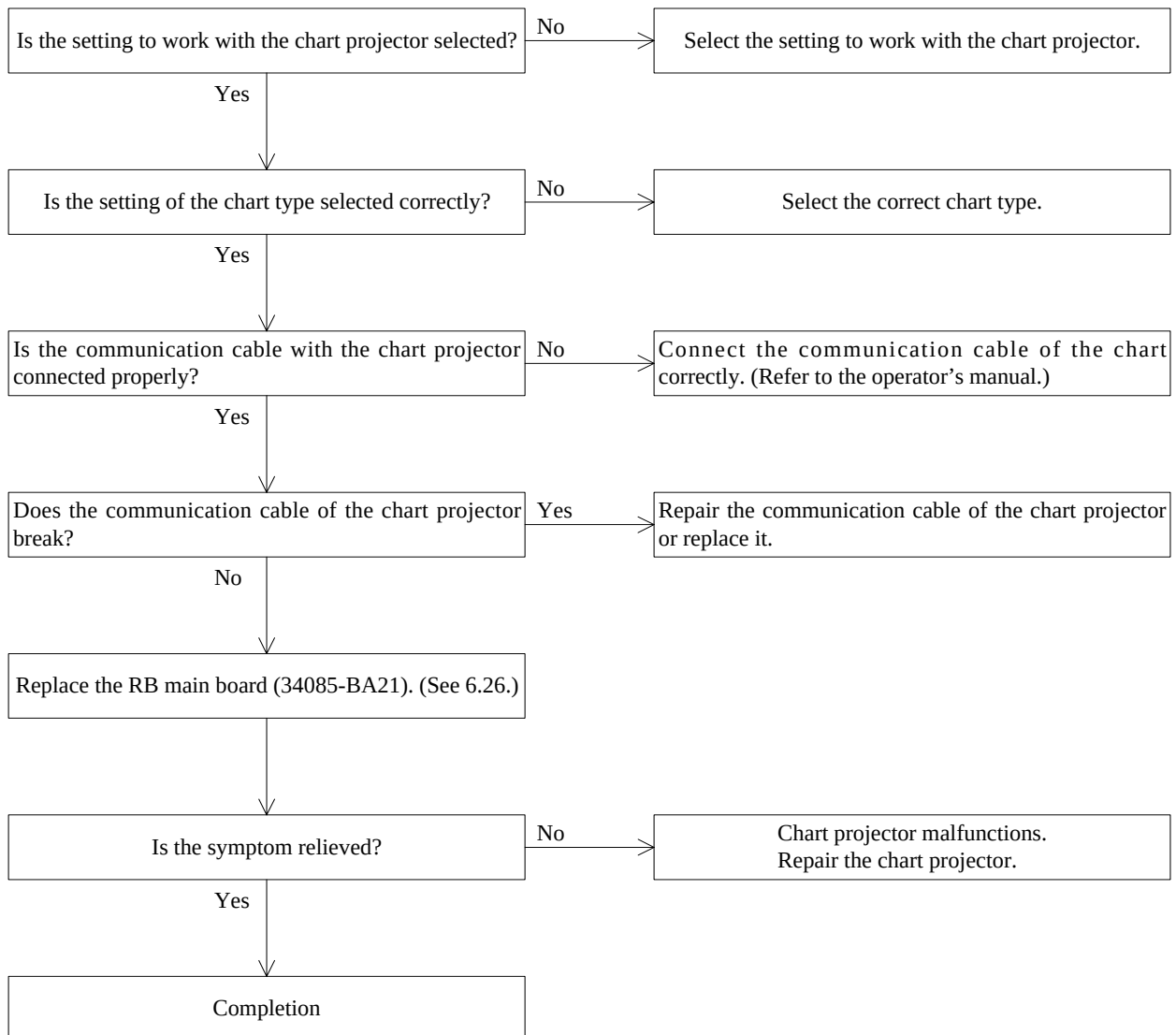
4.7 The printer does not print.



4.8 The communication with the auto refractometer or lensmeter cannot be done.



4.9 The chart projector does not work as specified with the control box.

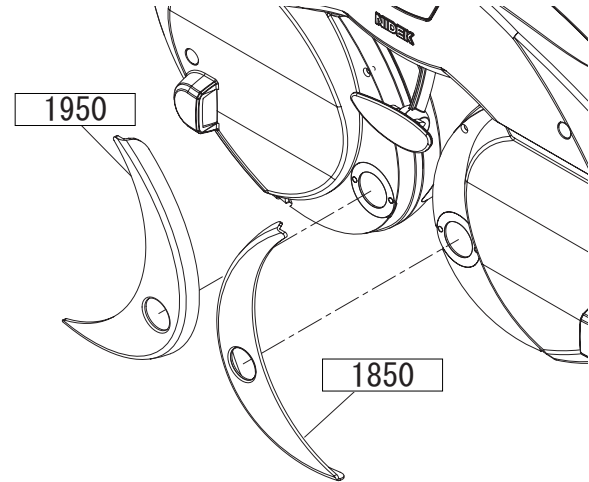


§5 REMOVING COVERS

5.1 Covers of the main body

5.1.1 Face shields R and L

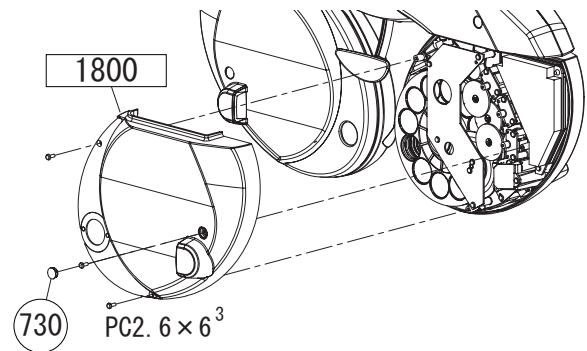
1. Remove the face shield R (34085-1850) and L (34085-1950).



5.1.2 Rear covers

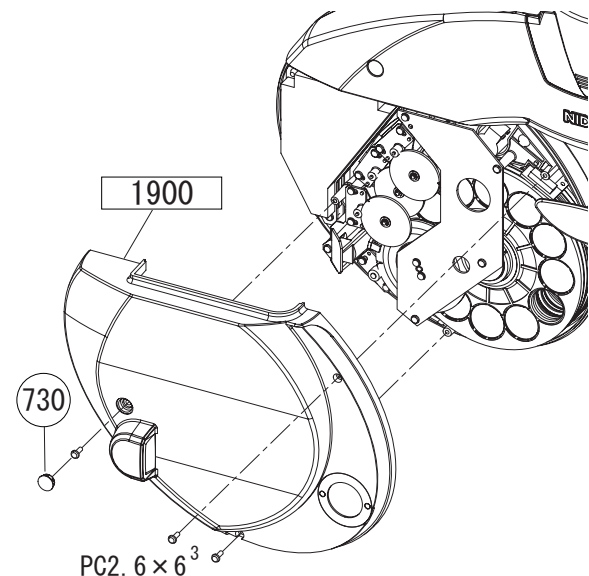
5.1.2.1 Rear cover R

1. Remove the face shield R (34085-1850). (See 5.1.1.)
2. Remove the cap (32105-M730).
3. Unscrew PC2.6×6 (n=3) to remove the rear cover R (34085-1800).
4. Reassemble the parts in reverse order.



5.1.2.2 Rear cover L

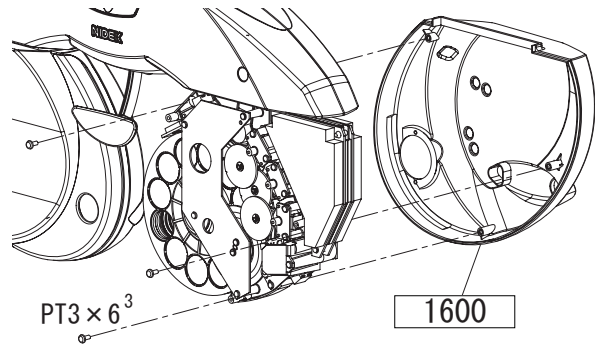
1. Remove the face shield (34085-1950). (See 5.1.1.)
2. Remove the cap (32105-M730).
3. Unscrew PC2.6×6 (n=3) to remove the rear cover L (34085-1900).
4. Reassemble the parts in reverse order.



5.1.3 Front covers

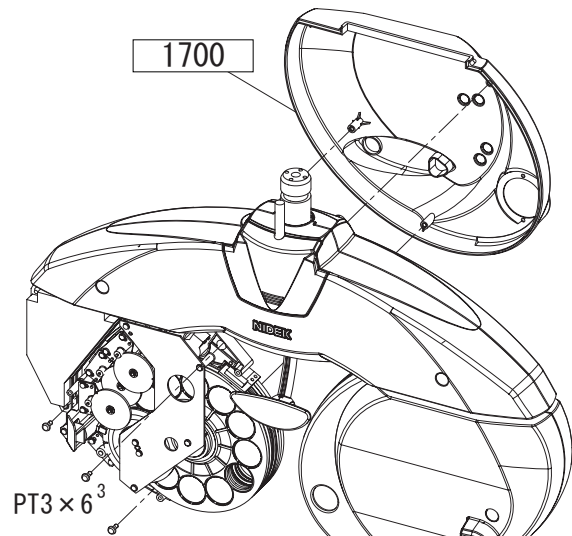
5.1.3.1 Front cover R

1. Remove the rear cover R (34085-1800).
(See 5.1.2.)
2. Unscrew PT3×6 (n=3) and remove the front cover R (34085-1600).
3. Reassemble the parts in reverse order.



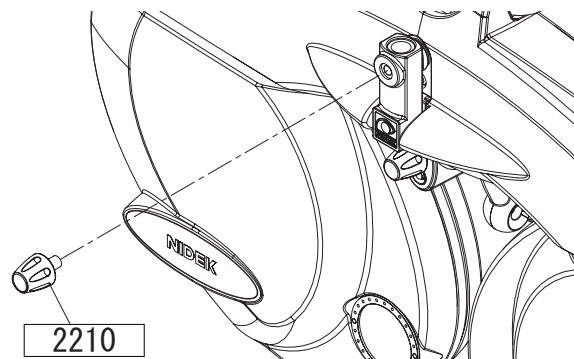
5.1.3.2 Front cover L

1. Remove the rear cover L (34085-1900).
(See 5.1.2.)
2. Unscrew PT3×6 (n=3) and remove the front cover L (34085-1700).
3. Reassemble the parts in reverse order.



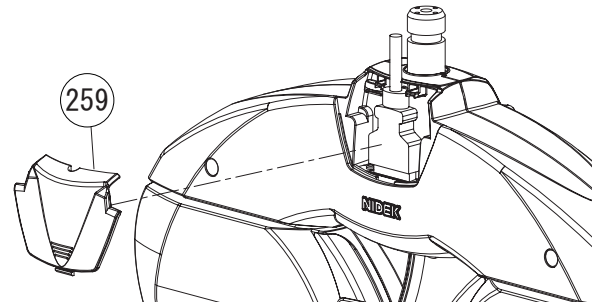
5.1.4 Knob S AS

1. Remove the knob S AS (34085-2210).



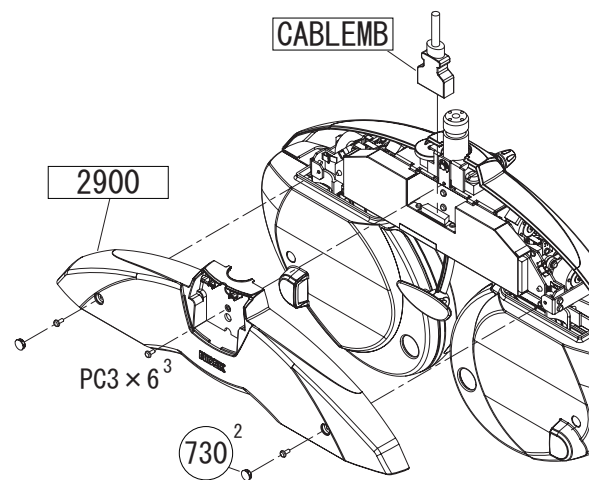
5.1.5 Upper cover J

1. Remove the upper cover J (34085-M259).



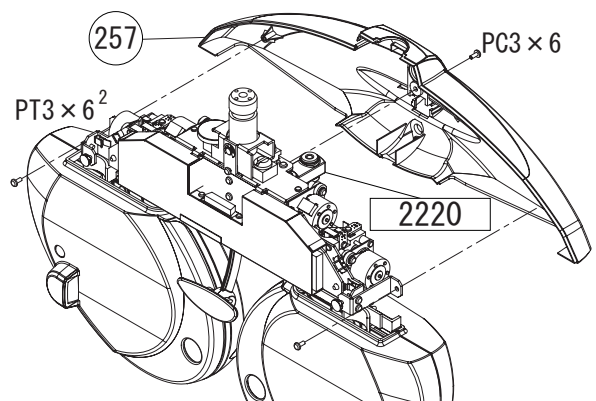
5.1.6 Upper rear cover

1. Remove the upper cover J (34085-M259). (See 5.6.)
2. Remove the cable MB.
3. Remove the caps (32105-M730, n=2) and PC3×6 (n=3).
4. Remove the rear cover.
5. Reassemble the parts in reverse order.



5.1.7 Upper cover F

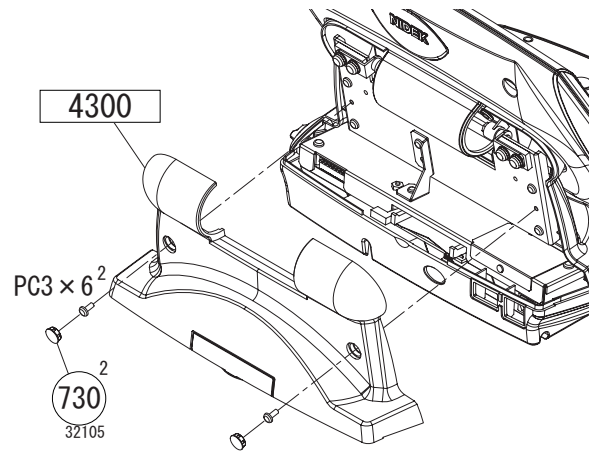
1. Remove the knob S AS (34085-2210). (See 5.1.4.)
2. Tilt the holder AS (34085-2220) toward the front.
3. Unscrew PC3×6 and PT3×6 (n=2) and remove the upper cover F (34085-M257).
4. Reassemble the parts in reverse order.



5.2 Control box covers

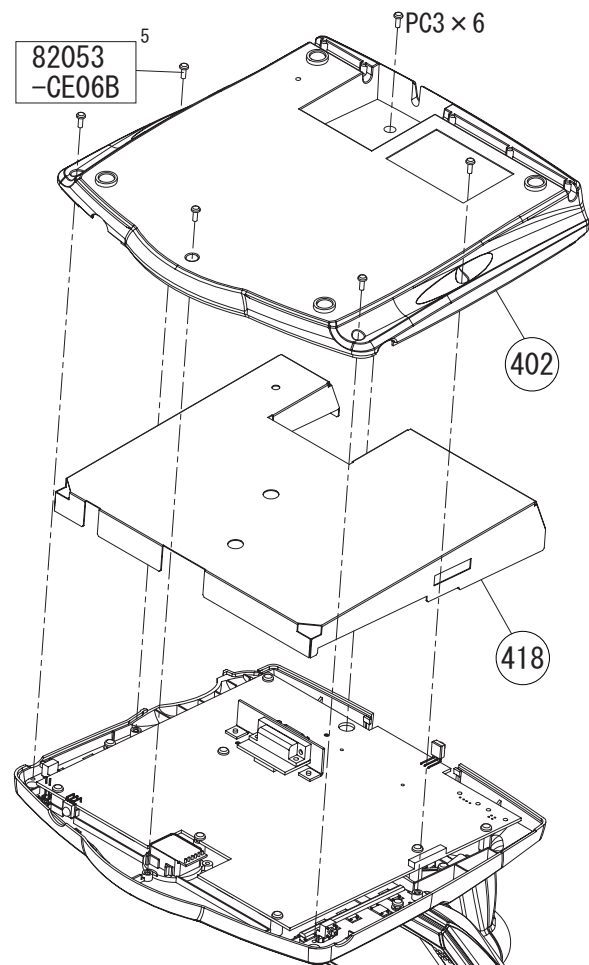
5.2.1 Rear cover AS

1. Remove the cap (32105-M730, n=2).
2. Unscrew PC3×6 (n=2) and remove the rear cover AS (34085-4300).
3. Reassemble the parts in reverse order.



5.2.2 EMC cover

1. Unscrew the tight screw P (825053-CE06B, n=5) and PC3×6 to remove the lower cover (34085-M402).
2. Remove the EMC cover (34085-M418).
3. Reassemble the parts in reverse order.



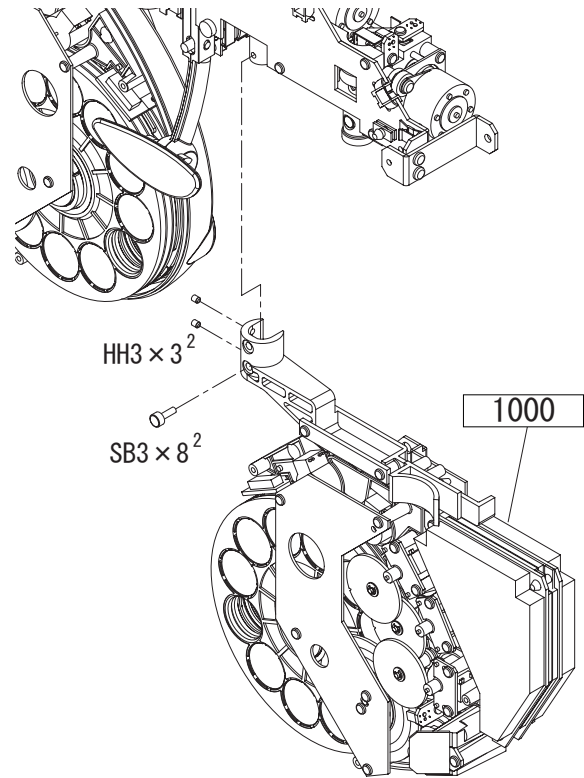
§6 REPLACEMENT

- * For the marked ($\triangle$) procedures in this section, see the adjustment precautions in §2 SAFETY PRECAUTIONS.

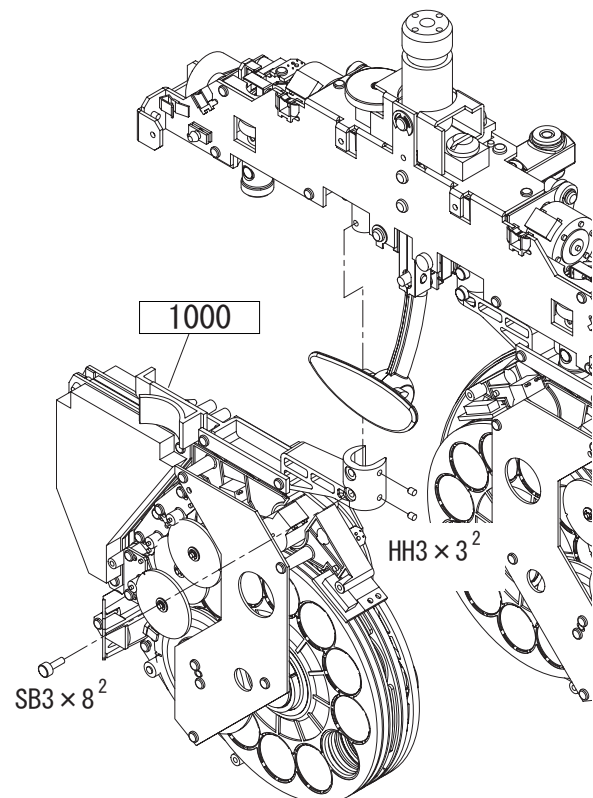
6.1 Battery AS

Replacement part: 34085-1000

1. Remove the covers. (See 5.1.)
2. Remove the MB main board (34085-BA01). (See 6.17.)
3. Replace the right side of the battery AS.
 - * Viewed from the patient's side
 - 1) Remove connector J3 on the motor CPU board (34085-BA02).
 - 2) Unscrew HH3×3 (n=2) and SB3×8 (n=2). Replace the right side of the battery AS (34085-1000).



4. Replace the left side of the battery AS.
 - * Viewed from the patient's side
 - 1) Remove connector J3 on the R motor CPU board (34085-BA04).
 - 2) Unscrew HH3×3 (n=2) and SB3×8 (n=2). Replace the left side of the battery AS (34085-1000).
5. Reassemble the parts in reverse order.

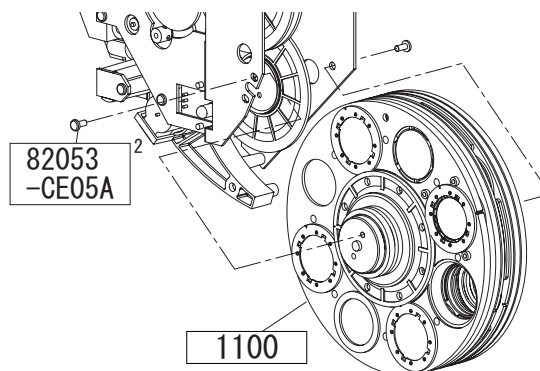


6.2 Disk AS

6.2.1 R disk AS (⚠)

Replacement part: 34085-1100

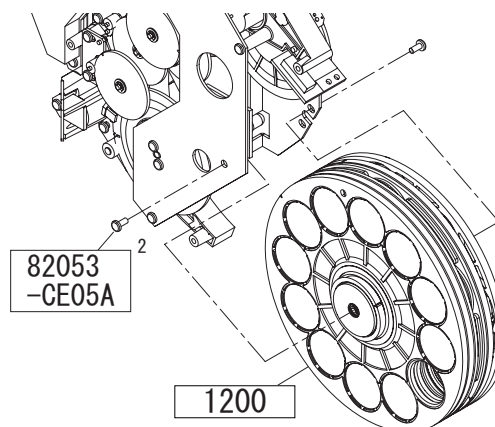
1. Remove the covers. (See 5.1.)
2. Unscrew the small pan head screw (82053-CE05A, n=2) and replace the R disk AS (34085-1100).
3. Reassemble the parts in reverse order.



6.2.2 L disk AS (⚠)

Replacement part: 34085-1200

1. Remove the covers. (See 5.1.)
2. Unscrew the small pan head screw (82053-CE05A, n=2) and replace the L disk AS (34085-1200).
3. Reassemble the parts in reverse order.

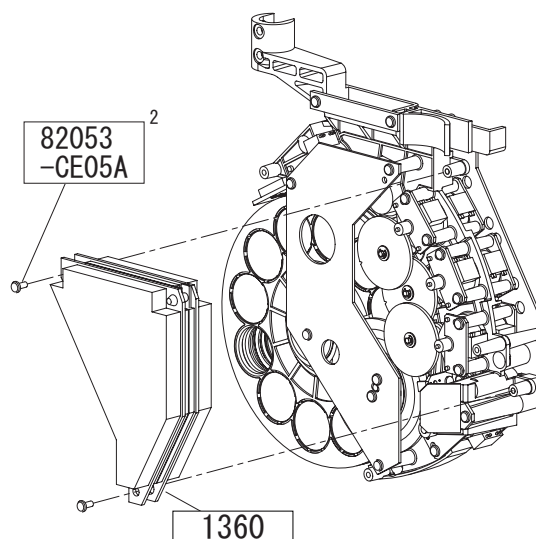


6.3 Boards R and L

6.3.1 Board R

Replacement part: 34085-1360

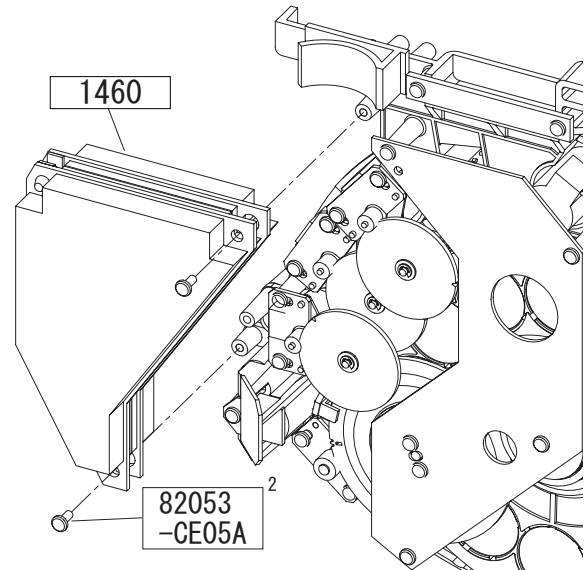
1. Remove the covers. (See 5.1.)
2. Remove connectors J2 to J8 on the R motor CPU board (34085-BA02).
3. Remove connectors J2 to J10 on the R motor DRIVER board (34085-BA03).
4. Unscrew the small pan head screw (82053-CE05A, n=2) and replace the board R (34085-1360).
5. Reassemble the parts in reverse order.



6.3.2 Board L

Replacement part: 34085-1460

1. Remove the covers. (See 5.1.)
2. Remove connectors J2 to J8 on the L motor CPU board (34085-BA04).
3. Remove connectors J2 to J10 on the L motor driver board (34085-BA05).
4. Remove the pan head screw (82053-CE05A, n=2) and replace the board L (34085-1460).
5. Reassemble the parts in reverse order.

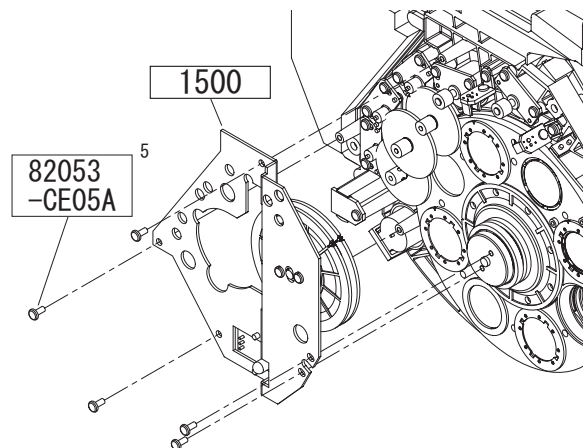


6.4 Plates

6.4.1 Plate FR (⚠)

Replacement part: 34085-1500

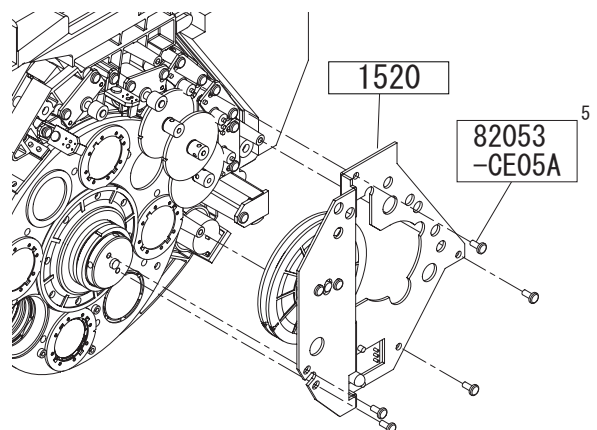
1. Remove the covers. (See 5.1.)
2. Remove connector J2 on the L motor CPU board (34085-BA02).
3. Remove the pan head screw (82053-CE05A, n=5) and replace the plate FR (34085-1500).
4. Reassemble the parts in reverse order.



6.4.2 Plate FL (⚠)

Replacement part: 34085-1520

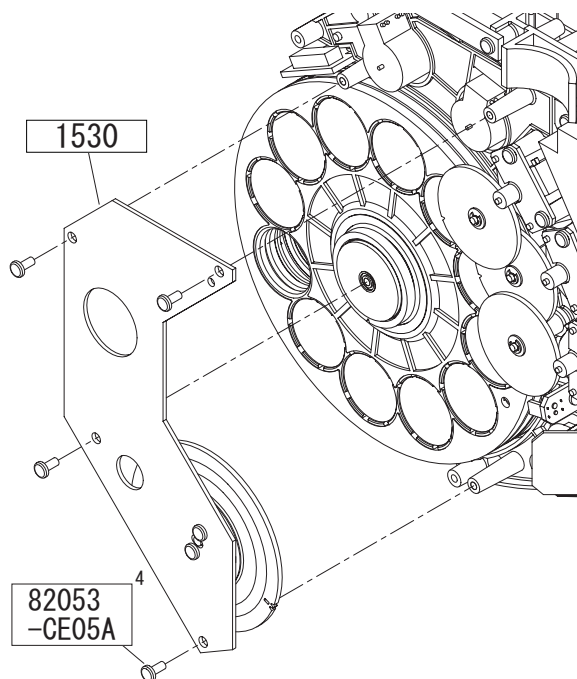
1. Remove the covers. (See 5.1.)
2. Remove connector J2 on the R motor CPU board (34085-BA04).
3. Remove the pan head screw (82053-CE05A, n=5) and replace the plate FL (34085-1520).
4. Reassemble the parts in reverse order.



6.4.3 Plate BR (⚠)

Replacement part: 34085-1530

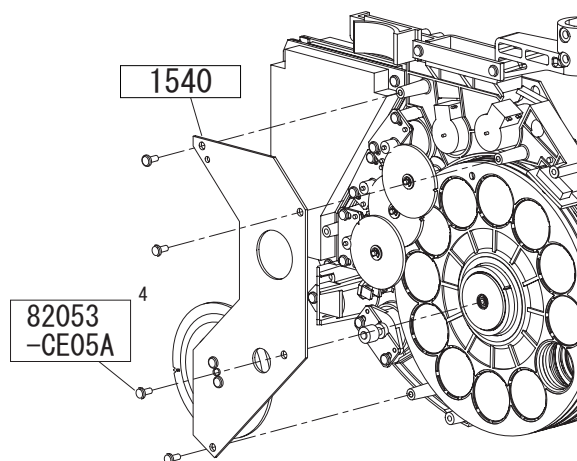
1. Remove the covers. (See 5.1.)
2. Remove the pan head screw (82053-CE05A, n=4) and replace the plate BR (34085-1530).
3. Reassemble the parts in reverse order.



6.4.4 Plate BL (⚠)

Replacement unit: 344085-1540

1. Remove the covers. (See 5.1.)
2. Remove the pan head screw (82053-CE05A, n=4) and replace the plate BL (34085-1540).
3. Reassemble the parts in reverse order.

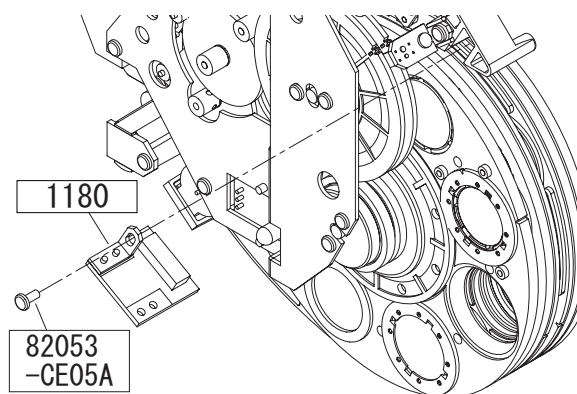


6.5 Sensor 1

6.5.1 Sensor 1R

Replacement part: 34085-1180

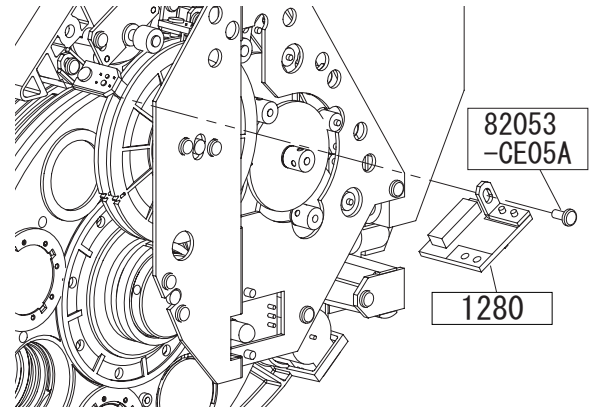
1. Remove the covers. (See 5.1.)
2. Remove connector P7 (J7) on the L motor CPU board (34085-BA02).
3. Remove the pan head screw (82053-CE05A) and replace the sensor 1R.
4. Reassemble the parts in reverse order.



6.5.2 Sensor 1L

Replacement part: 34085-1280

1. Remove the covers. (See 5.1.)
2. Remove connector P7 (J7) on the R motor CPU board (34085-BA04).
3. Remove the pan head screw (82053-CE05A) and replace the sensor 1L (34085-1280).
4. Reassemble the parts in reverse order.



6.6 Frames

6.6.1 Frame R (⚠)

Replacement part: 34085-1300

1. Remove plate FR (34085-1500), plate BR (34085-1530) and R disk AS (34085-1100). (See 6.2 and 6.4.)
2. Replace frame R (34085-1300).
3. Reassemble the parts in reverse order.

6.6.2 Frame L (⚠)

Replacement part: 34085-1400

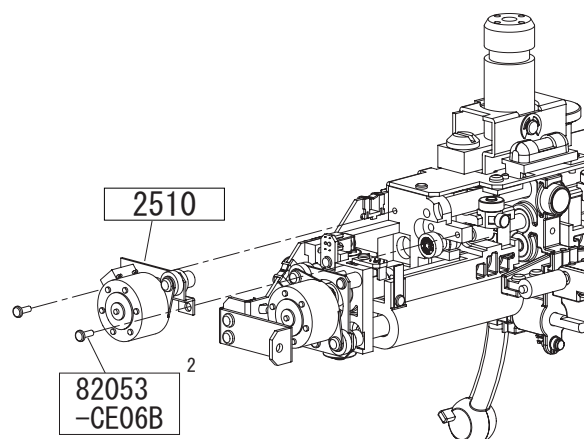
1. Remove the plate FL (34085-1520), plate BL (34085-1540) and L disk AS (34085-1200). (See 6.2 and 6.4.)
2. Replace the frame L (34085-1400).
3. Reassemble the parts in reverse order.

6.7 PD motors

6.7.1 PD motor R

Replacement part: 34085-2510

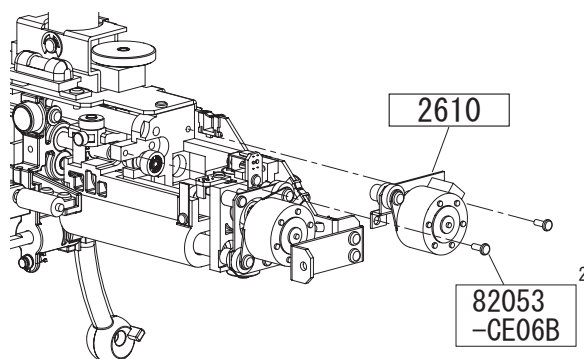
1. Remove the covers. (See 5.1.)
2. Unscrew the tight screw P (82053-CE06B, n=2) and replace the PD motor R (34085-2510).
3. Reassemble the parts in reverse order.



6.7.2 PD motor L

Replacement part: 34085-2610

1. Remove the covers. (See 5.1.)
2. Unscrew the tight screw P (82053-CE06B, n=2) and replace the PD motor L (34085-2610).
3. Reassemble the parts in reverse order.

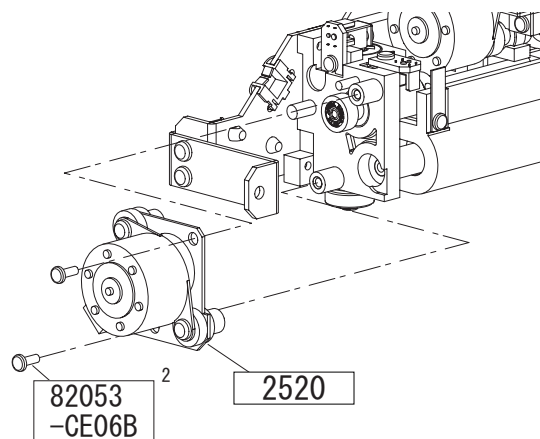


6.8 CON motors

6.8.1 CON motor R

Replacement part: 34085-2520

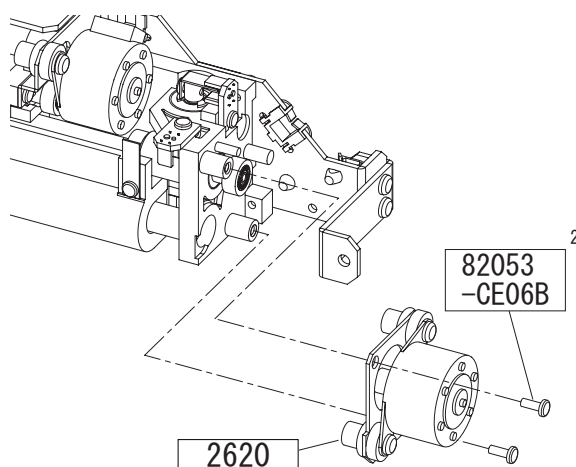
1. Remove the covers. (See 5.1.)
2. Unscrew the tight screw P (82053-CE06B, n=2) and replace the CON motor R (34085-2520).
3. Reassemble the parts in reverse order.



6.8.2 CON motor L

Replacement part: 34085-2620

1. Remove the covers. (See 5.1.)
2. Unscrew the tight screw P (82053-CE06B, n=2) and replace the CON motor L (34085-2620).
3. Reassemble the parts in reverse order.



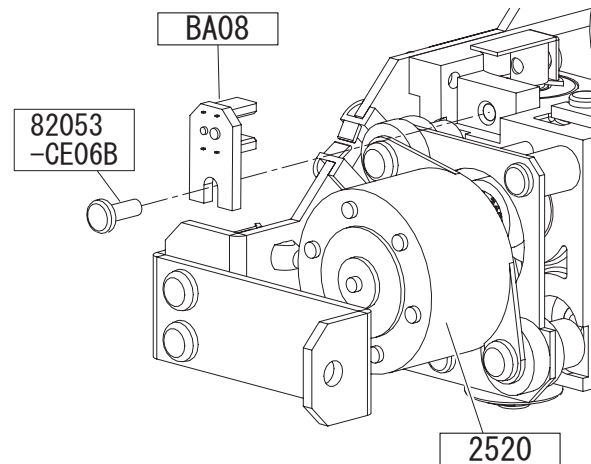
6.9 PI sensor boards

6.9.1 CON sensor

6.9.1.1 CON sensor of the upper brace R

Replacement part: 34085-BA08

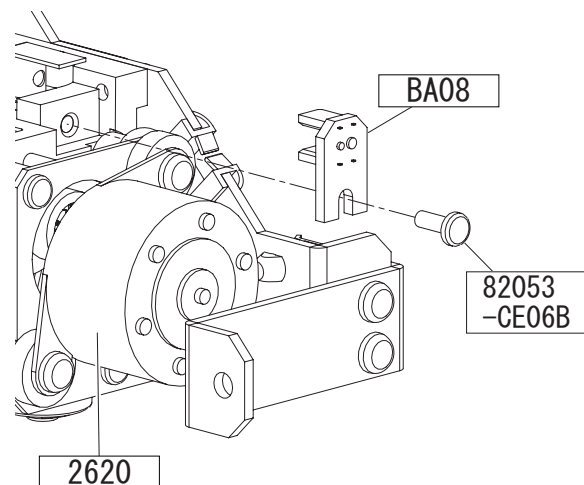
1. Remove the covers. (See 5.1.)
2. Remove connector J9 on the MB main board (34085-BA01).
3. Unscrew the tight screw P (82053-CE06B) of the upper brace R (34085-2500) and replace the PI sensor board (34085-BA08).
4. Reassemble the parts in reverse order.



6.9.1.2 CON sensor of the upper brace L

Replacement part: 34085-BA08

1. Remove the covers. (See 5.1.)
2. Remove connector J11 on the MB main board (34085-BA01).
3. Unscrew the tight screw P (82053-CE06B) of the upper brace L (34085-2600) and replace the PI sensor board (34085-BA08).
4. Reassemble the parts in reverse order.

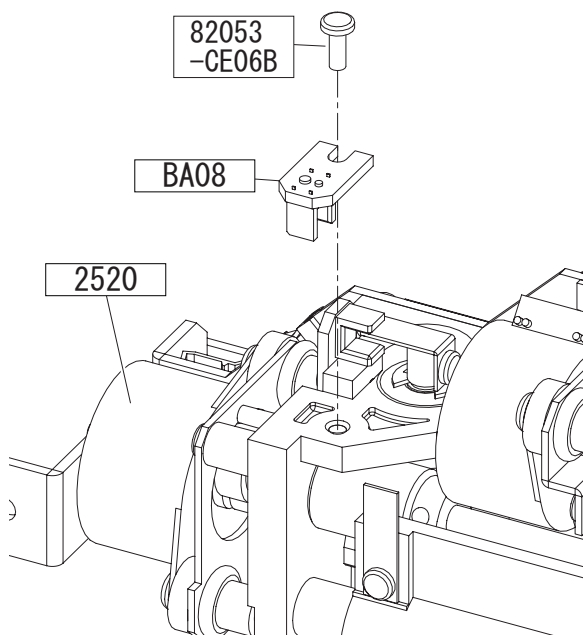


6.9.2 PD sensors

6.9.2.1 PD sensor of the upper brace R

Replacement part: 34085-BA08

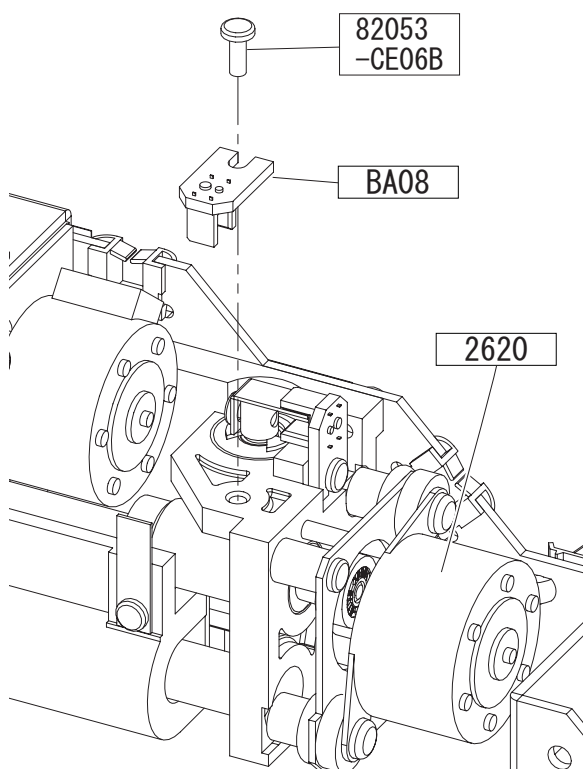
1. Remove the covers. (See 5.1.)
2. Remove connector J8 on the MB main board (34085-BA01).
3. Unscrew the tight screw P (82053-CE06B) on the right side (viewed from the patient's side) and replace the PI sensor board (34085-BA08).
4. Reassemble the parts in reverse order.



6.9.2.2 PD sensor of the upper brace L

Replacement part: 34085-BA08

1. Remove the covers. (See 5.1.)
2. Remove connector J10 on the MB main board (34085-BA01).
3. Unscrew the tight screw P (82053-CE06B) on the left side (viewed from the patient's side) and replace the PI sensor board (34085-BA08).
4. Reassemble the parts in reverse order.



6.10 Motors and sensors of frame R

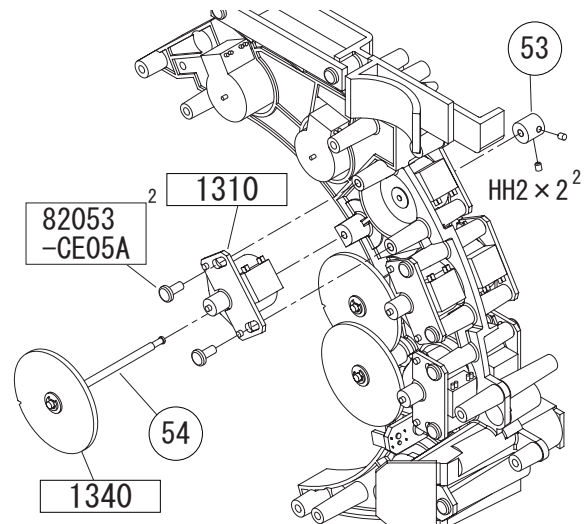
6.10.1 Motor SCA

6.10.1.1 Motor for the S2 disk

Replacement part: 34085-1310

1. Remove the covers. (See 5.1.)
2. Remove connector J2 on the L motor driver board (34085-BA03).
3. Unscrew HH2×2 (n=2) and remove the stopper (34085-M053).
4. Remove the double gear (shorter one, 34085-1340) together with the double gear spindle (34085-M054).
5. Unscrew the pan head screw (82053-CE05A, n=2) and replace the motor SCA (34085-1310).
6. Reassemble the parts in reverse order.

* Adjust the gear engagement at the position of the motor SCA (34085-1310).

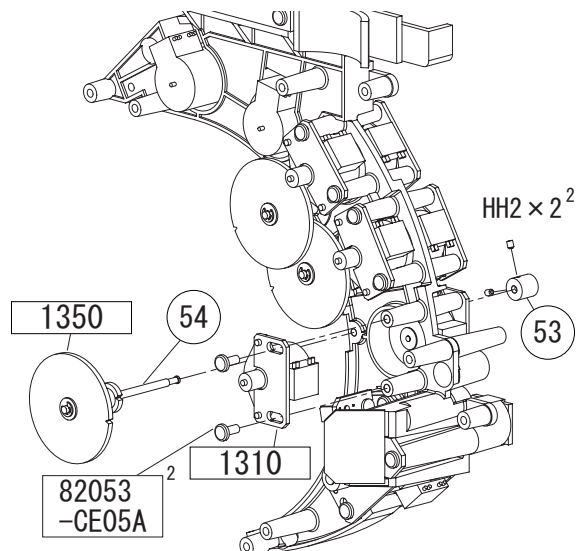


6.10.1.2 Motor for the C2 disk

Replacement part: 34085-1310

1. Remove the covers. (See 5.1.)
2. Remove connector J4 on the L motor driver board (34085-BA03).
3. Unscrew HH2×2 (n=2) and remove the stopper (34085-M053).
4. Remove the double gear (longer one, 34085-1350) together with the double gear spindle (34085-M054).
5. Remove the pan head screw (82053-CE05A, n=2) and replace the motor SCA (34085-1310).
6. Reassemble the parts in reverse order.

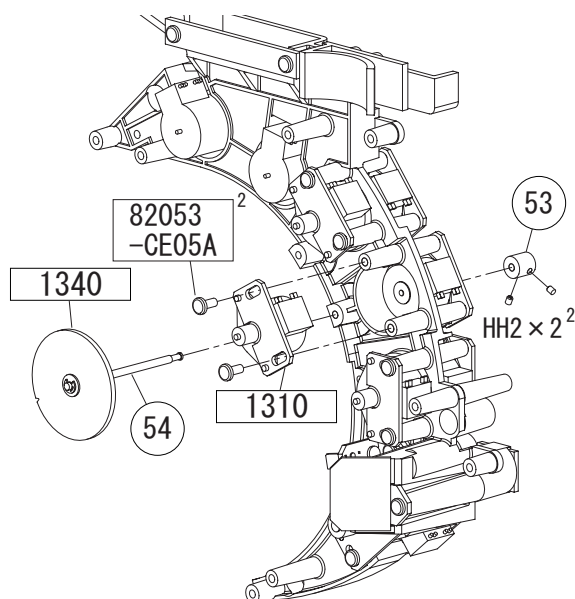
* Adjust the gear engagement at the position of the motor SCA (34085-1310).



6.10.1.3 Motor for the S1 disk

Replacement part: 34085-1310

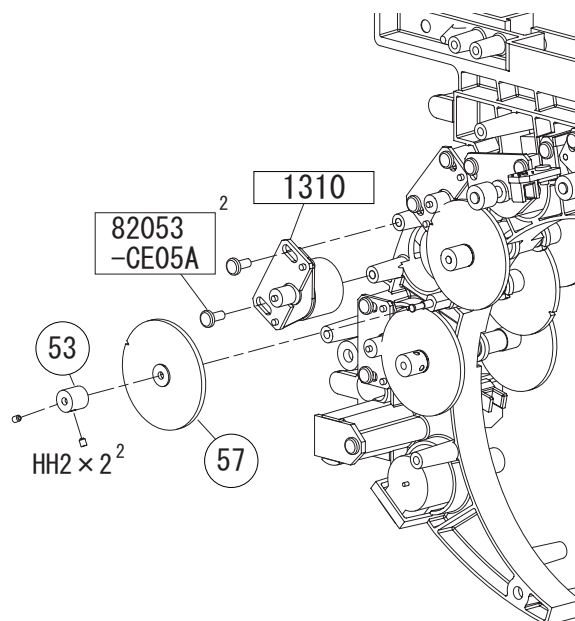
1. Remove the covers. (See 5.1.)
 2. Remove the motor for the S2 disk and the one for the C2 disk. (See 6.10.1.2 and 6.10.1.3.)
 3. Remove connector J3 on the L motor driver board (34085-BA03).
 4. Unscrew HH2×2 (n=2) and remove the stopper (34085-M053).
 5. Remove the double gear (shorter, 82053-1340) together with the double gear spindle (34085-M054).
 6. Remove the pan head screw (82053-CE05A, n=2) and replace the motor SCA (34085-1310).
 7. Reassemble the parts in reverse order.
- * Adjust the gear engagement at the position of the motor SCA (34085-1310).



6.10.1.4 Motor for the A1 disk (⚠)

Replacement part: 34085-1310

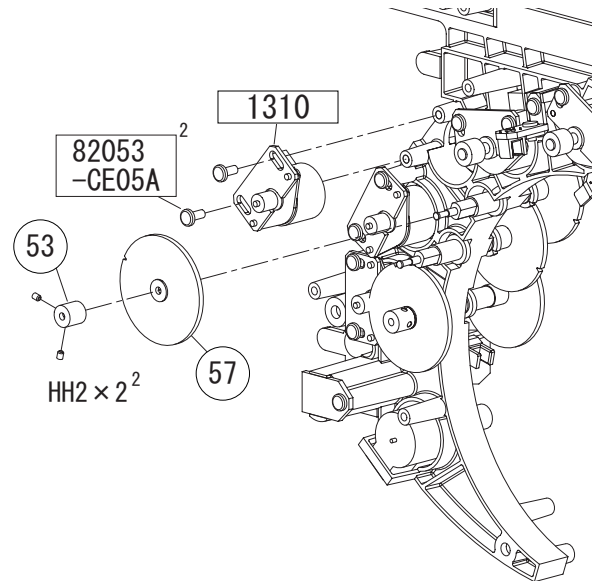
1. Remove the plate FR (34085-1500). (See 6.4.1.)
 2. Remove connector J6 on the L motor driver board (34085-BA03).
 3. Unscrew HH2×2 (n=2) to remove the stopper (34085-M053), and remove the double gear (34085-M057).
 4. Remove the pan head screw (82053-CE05A, n=2) and replace the motor SCA (34085-1310).
 5. Reassemble the parts in reverse order.
- * Adjust the gear engagement at the position of the motor SCA (34085-1310).



6.10.1.5 Motor for the C1 disk (⚠)

Replacement part: 34085-1310

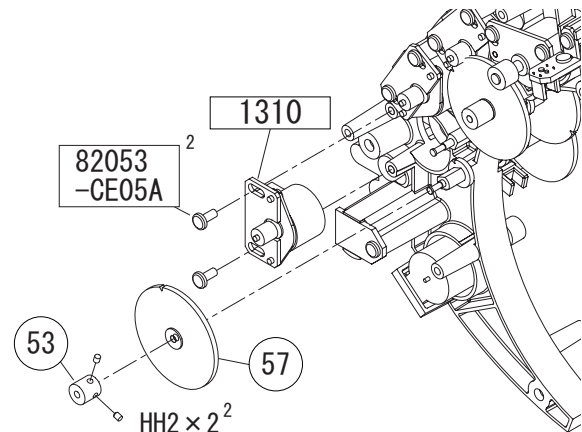
1. Remove the plate FR (34085-1500).
(See 6.4.1.)
2. Remove the motor for the A1 disk.
(See 6.10.1.4.)
3. Remove connector J5 on the L motor driver board (34085-BA03).
4. Unscrew HH2×2 (n=2) to remove the stopper (34085-M053), and remove the double gear (34085-M057).
5. Remove the pan head screw (82053-CE05A, n=2) and replace the motor SCA (34085-1310).
6. Reassemble the parts in reverse order.
* Adjust the gear engagement at the position of the motor SCA (34085-1310).



6.10.1.6 Motor for the A2 disk (⚠)

Replacement part: 34085-1310

1. Remove the plate FR (34085-1500).
(See 6.4.1.)
2. Remove the motor for the A1 disk.
(See 6.10.1.4.)
3. Remove connector J7 on the L motor driver board (34085-BA03).
4. Unscrew HH2×2 (n=2), and remove the stopper (34085-M053), and remove the double gear (34085-M057).
5. Remove the pan head screw (82053-CE05A, n=2) and replace the motor SCA (34085-1310).
6. Reassemble the parts in reverse order.
* Adjust the gear engagement at the position of the motor SCA (34085-1310).

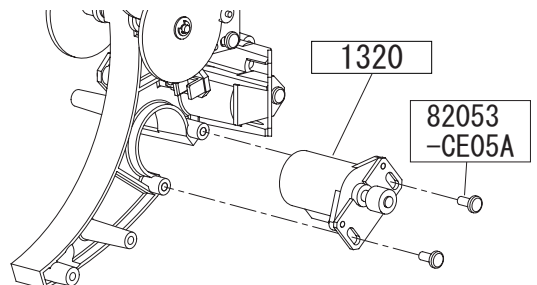


6.10.2 Motor PCA

6.10.2.1 Motor for the CA disk (⚠)

Replacement part: 34085-1320

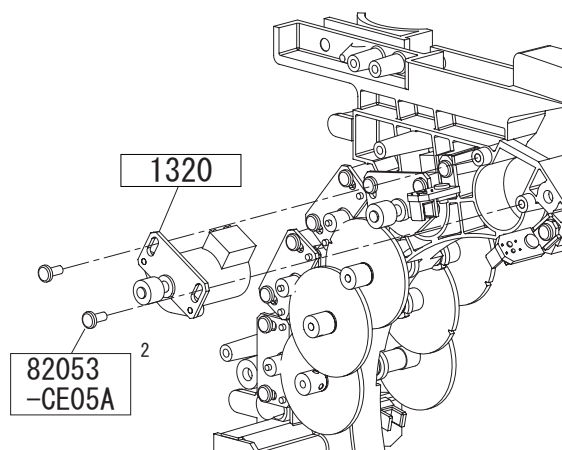
1. Remove the plate BR (34085-1530).
(See 6.4.3.)
2. Remove connector J8 on the L motor driver board (34085-BA03).
3. Remove the pan head screw (82053-CE05A, n=2) and replace the motor PCA (34085-1320).
6. Reassemble the parts in reverse order.
* Adjust the gear engagement at the position of the motor PCA (34085-1320).



6.10.2.2 Motor for the P1 disk (⚠)

Replacement part: 34085-1320

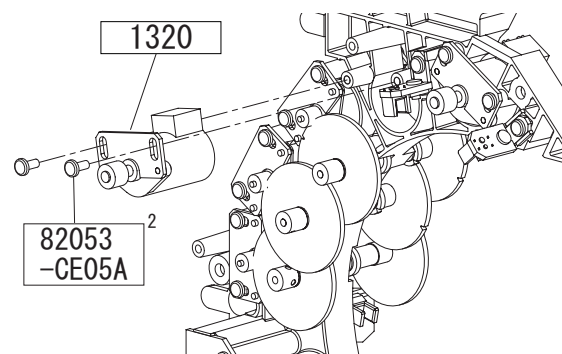
1. Remove the plate FR (34085-1500).
(See 6.4.3.)
2. Remove connector J9 on the L motor driver board (34085-BA03).
3. Remove the pan head screw (82053-CE05A, n=2) and replace the motor PCA (34085-1320).
4. Reassemble the parts in reverse order.
* Adjust the gear engagement at the position of the motor PCA (34085-1320).



6.10.2.3 Motor for the P2 disk (⚠)

Replacement part: 34085-1320

1. Remove the plate FR (34085-1500).
(See 6.4.3.)
2. Remove connector J10 on the L motor driver board (34085-BA03).
3. Remove the pan head screw (82053-CE05A, n=2) and replace the motor PCA (34085-1320).
4. Reassemble the parts in reverse order.
* Adjust the gear engagement at the position of the motor PCA (34085-1320).

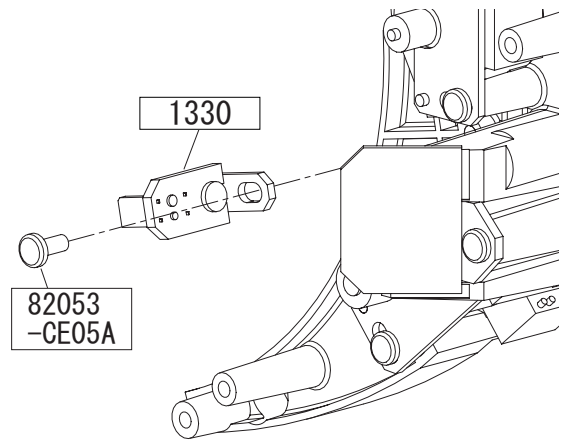


6.10.3 Sensor 2

6.10.3.1 Sensor for the CA disk (⚠)

Replacement part: 34085-1330

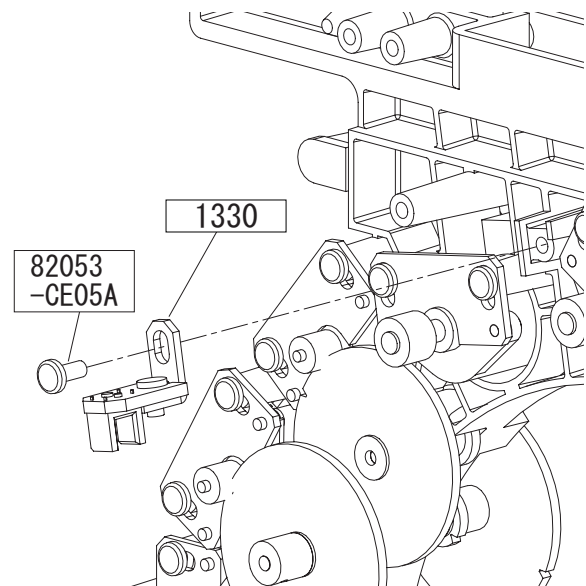
1. Remove the covers. (See 5.1.)
2. Remove connector J4 on the L motor CPU board (34085-BA02).
3. Remove the pan head screw (82053-CE05A, n=2) and replace sensor 2 (34085-1330).
4. Reassemble the parts in reverse order.



6.10.3.2 Sensor for the P1 disk (⚠)

Replacement part: 34085-1330

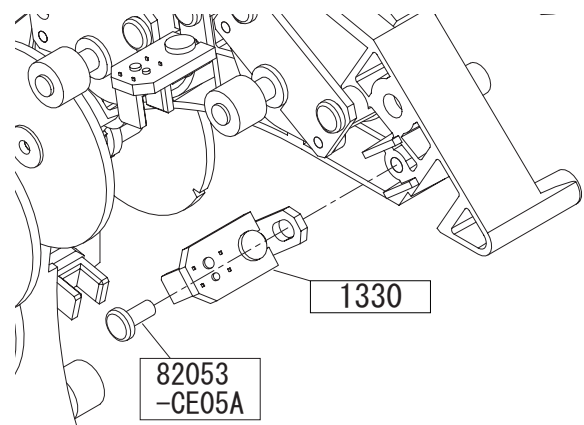
1. Remove the covers. (See 5.1.)
2. Remove connector J5 on the L motor CPU board (34085-BA02).
3. Remove the pan head screw (82053-CE05A, n=2) and replace sensor 2 (34085-1330).
4. Reassemble the parts in reverse order.



6.10.3.3 Sensor for the P2 disk (⚠)

Replacement part: 34085-1330

1. Remove the covers. (See 5.1.)
2. Remove connector J6 on the L motor CPU board (34085-BA02).
3. Remove the pan head screw (82053-CE05A, n=2) and replace sensor 2 (34085-1330).
4. Reassemble the parts in reverse order.



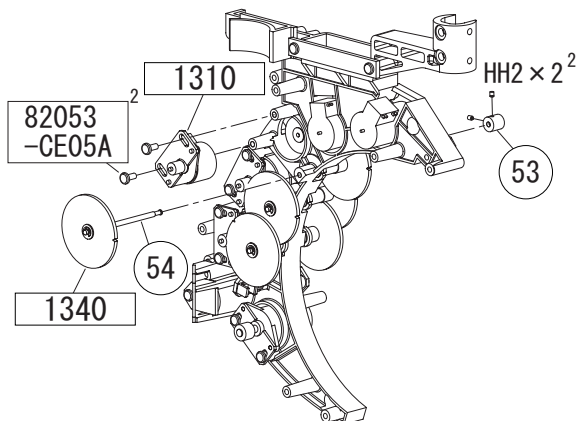
6.11 Motors or sensors of frame L

6.11.1 Motor SCA

6.11.1.1 Motor for the S2 disk

Replacement part: 34085-1310

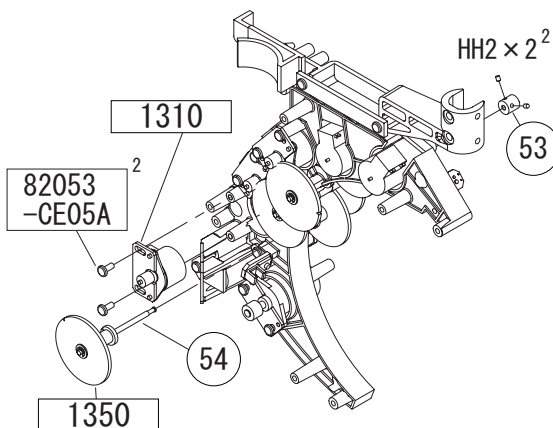
1. Remove the covers. (See 5.1.)
2. Remove connector J2 on the R motor driver board (34085-BA05).
3. Unscrew HH2×2 (n=2) and remove the stopper (34085-M053).
4. Remove the double gear (shorter, 34085-1340) together with the spindle of the double gear (34085-M054).
5. Remove the pan head screw (82053-CE05A, n=2) and replace motor SCA (34085-1310).
6. Reassemble the parts in reverse order.
 - * Adjust the gear engagement at the position of motor SCA (34085-1310).



6.11.1.2 Motor for the C2 disk

Replacement part: 34085-1310

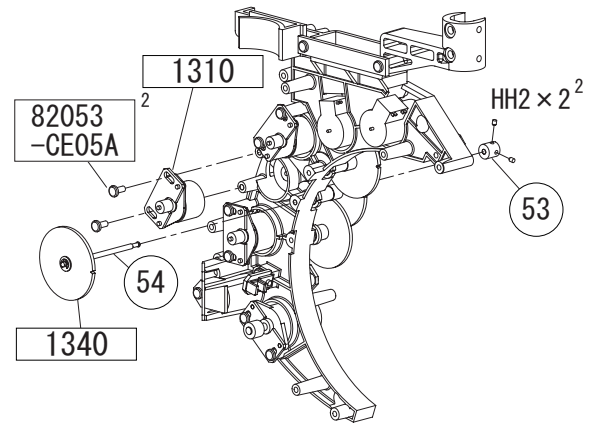
1. Remove the covers. (See 5.1.)
2. Remove connector J4 on the R motor driver board (34085-BA05).
3. Unscrew HH2×2 (n=2) and remove the stopper (34085-M053).
4. Remove the double gear (longer, 34085-1350) together with the spindle of the double gear (34085-M054).
5. Remove the pan head screw (82053-CE05A, n=2) and replace motor SCA (34085-1310).
6. Reassemble the parts in reverse order.
 - * Adjust the gear engagement at the position of motor SCA (34085-1310).



6.11.1.3 Motor for the S1 disk

Replacement part: 34085-1310

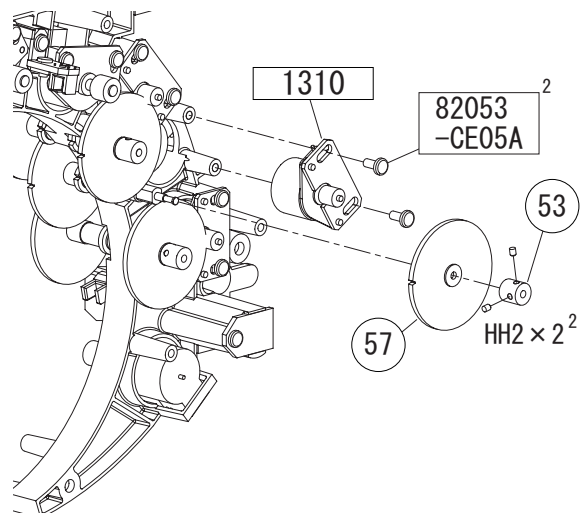
1. Remove the covers. (See 5.1.)
2. Remove the motors for the S2 disk and C2 disk. (See 6.11.1.2 and 6.11.1.3.)
3. Remove connector J3 on the R motor driver board (34085-BA05).
4. Unscrew HH2×2 (n=2) and remove the stopper (34085-M053).
5. Remove the double gear (shorter, 34085-1340) together with the spindle of the double gear (34085-M054).
6. Remove the pan head screw (82053-CE05A, n=2) and replace motor SCA (34085-1310).
6. Reassemble the parts in reverse order.
 - * Adjust the gear engagement at the position of motor SCA (34085-1310).



6.11.1.4 Motor for the A1 disk (⚠)

Replacement part: 34085-1310

1. Remove plate FL (34085-1520). (See 6.4.2.)
2. Remove connector J6 on the R motor driver board (34085-BA05).
3. Unscrew HH2×2 (n=2), and remove the stopper (34085-M053), and remove the double gear (34085-M057)..
4. Remove the pan head screw (82053-CE05A, n=2) and replace motor SCA (34085-1310).
5. Reassemble the parts in reverse order.
 - * Adjust the gear engagement at the position of motor SCA (34085-1310).

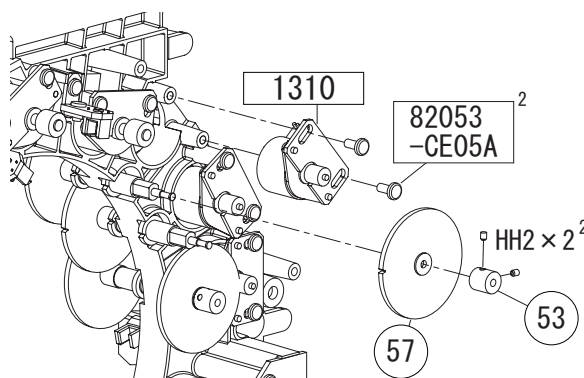


6.11.1.5 Motor for the C1 disk (⚠)

Replacement part: 34085-1310

1. Remove plate FL (34085-1520). (See 6.4.2.)
2. Remove the motor for the A1 disk. (See 6.11.1.4.)
3. Remove connector J5 on the R motor driver board (34085-BA05).
4. Unscrew HH2×2 (n=2), and remove the stopper (34085-M053), and remove the double gear (34085-M057).
5. Remove the pan head screw (82053-CE05A, n=2) and replace motor SCA (34085-1310).
6. Reassemble the parts in reverse order.

* Adjust the gear engagement at the position of motor SCA (34085-1310).

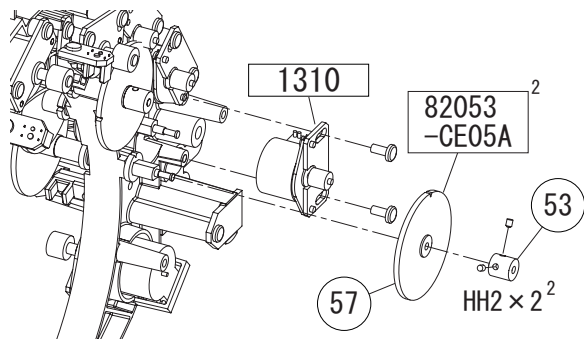


6.11.1.6 Motor for the A2 disk (⚠)

Replacement part: 34085-1310

1. Remove plate FL (34085-1520). (See 6.4.2.)
2. Remove the motor for the A1 disk. (See 6.11.1.4.)
3. Remove connector J7 on the R motor driver board (34085-BA05).
3. Unscrew HH2×2 (n=2) and remove the stopper (34085-M053).
4. Unscrew HH2×2 (n=2), and remove the stopper (34085-M053), and remove the double gear (34085-M057).
5. Remove the pan head screw (82053-CE05A, n=2) and replace motor SCA (34085-1310).
6. Reassemble the parts in reverse order.

* Adjust the gear engagement at the position of motor SCA (34085-1310).

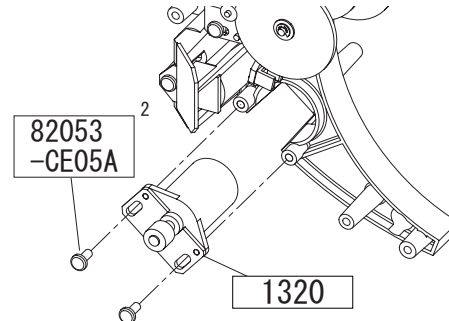


6.11.2 Motor for the PCA disk

6.11.2.1 Motor for the CA disk (⚠)

Replacement part: 34085-1320

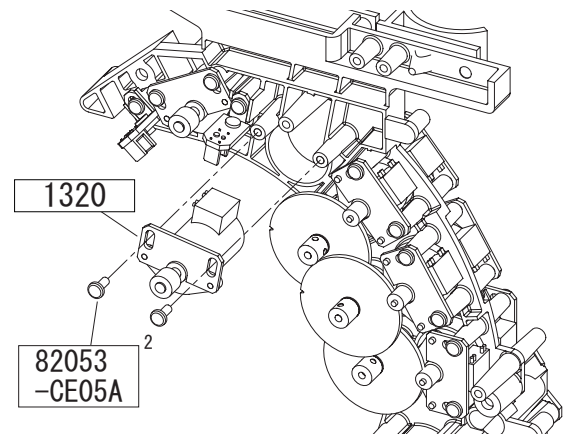
1. Remove plate BL (34085-1540). (See 6.4.4.)
2. Remove connector J8 on the R motor driver board (34085-BA05).
3. Remove the pan head screw (82053-CE05A, n=2) and replace motor PCA (34085-1320).
4. Reassemble the parts in reverse order.
 - * Adjust the gear engagement at the position of motor PCA (34085-1320).



6.11.2.2 Motor for the P1 disk (⚠)

Replacement part: 34085-1320

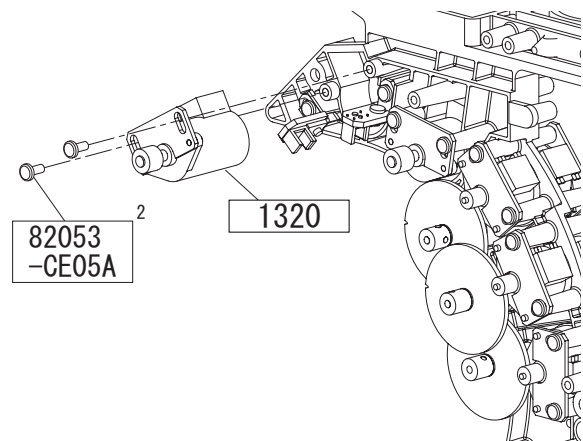
1. Remove plate FL (34085-1520). (See 6.4.4.)
2. Remove connector J9 on the R motor driver board (34085-BA05).
3. Remove the pan head screw (82053-CE05A, n=2) and replace motor PCA (34085-1320).
4. Reassemble the parts in reverse order.
 - * Adjust the gear engagement at the position of motor PCA (34085-1320).



6.11.2.3 Motor for the P2 disk (⚠)

Replacement part: 34085-1320

1. Remove plate FL (34085-1520). (See 6.4.4.)
2. Remove connector J10 on the R motor driver board (34085-BA05).
3. Remove the pan head screw (82053-CE05A, n=2) and replace motor PCA (34085-1320).
4. Reassemble the parts in reverse order.
 - * Adjust the gear engagement at the position of motor PCA (34085-1320).

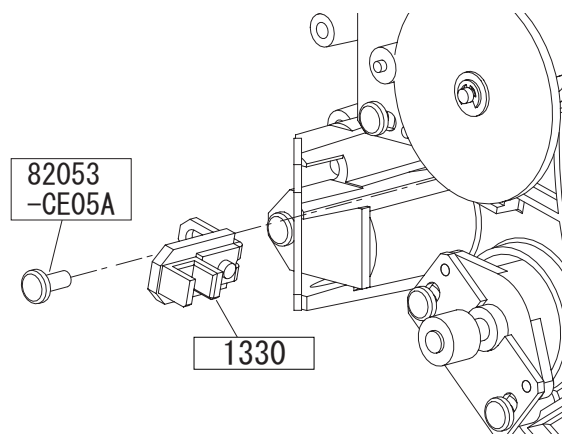


6.11.3 Sensor 2

6.11.3.1 Motor for the CA disk (⚠)

Replacement part: 34085-1330

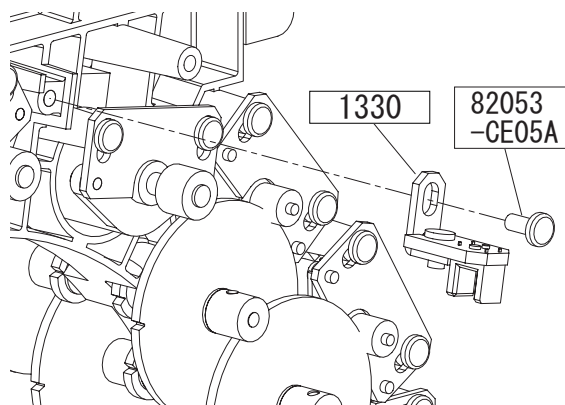
1. Remove the covers. (See 5.1.)
2. Remove connector J4 on the R motor CPU board (34085-BA04).
3. Remove the pan head screw (82053-CE05A, n=2) and replace sensor 2 (34085-1330).
4. Reassemble the parts in reverse order.



6.11.3.2 Motor for the P1 disk (⚠)

Replacement part: 34085-1330

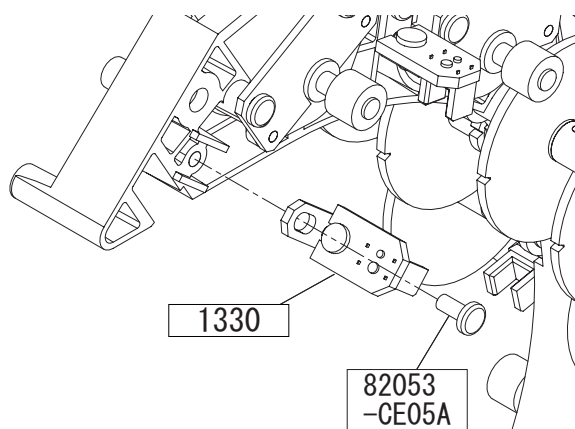
1. Remove the covers. (See 5.1.)
2. Remove connector J5 on the R motor CPU board (34085-BA04).
3. Remove the pan head screw (82053-CE05A, n=2) and replace sensor 2 (34085-1330).
4. Reassemble the parts in reverse order.



6.11.3.3 Motor for the P2 disk (⚠)

Replacement part: 34085-1330

1. Remove the covers. (See 5.1.)
2. Remove connector J6 on the R motor CPU board (34085-BA04).
3. Remove the pan head screw (82053-CE05A, n=2) and replace sensor 2 (34085-1330).
4. Reassemble the parts in reverse order.

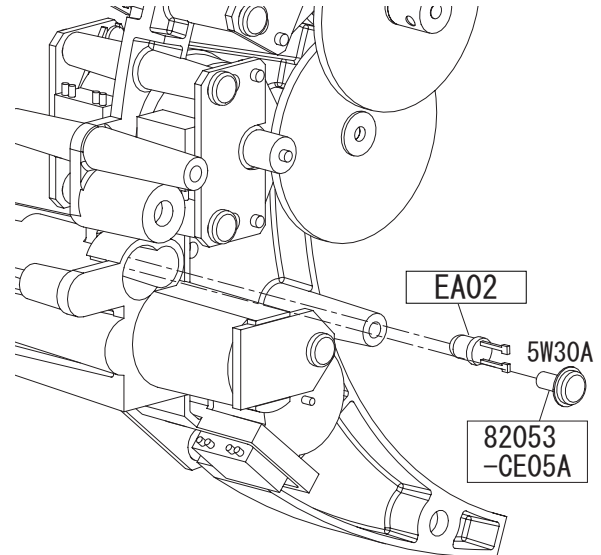


6.12 VD LED unit

6.12.1 VD LED unit of frame R

Replacement part: 34085-EA02

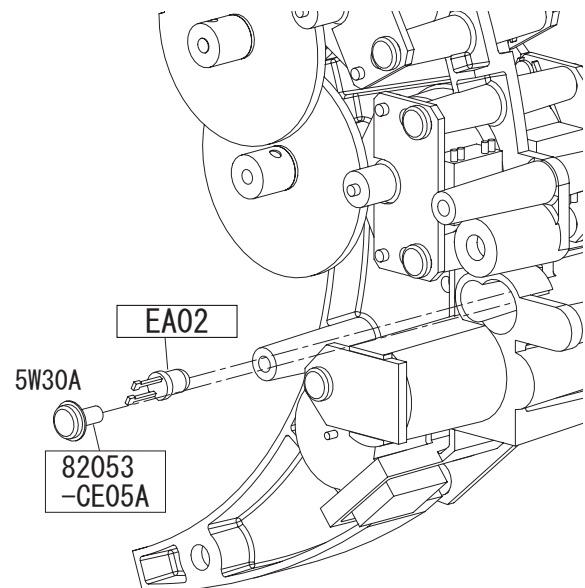
1. Remove the covers. (See 5.1.)
2. Remove connector J8 on the L motor CPU board (34085-BA02).
3. Remove the pan head screw (82053-CE05A, n=2) and 5W30A, and replace the VD LED unit (34085-EA02).
4. Reassemble the parts in reverse order.



6.12.2 VD LED unit of frame L

Replacement part: 34085-EA02

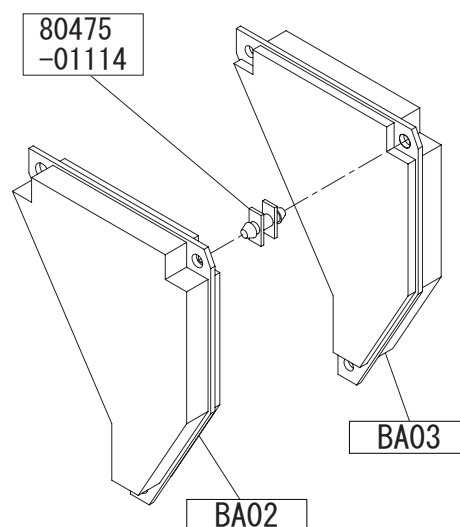
1. Remove the covers. (See 5.1.)
2. Remove connector J8 on the R motor CPU board (34085-BA04).
3. Remove the pan head screw (82053-CE05A, n=2) and 5W30A, and replace the VD LED unit (34085-EA02).
4. Reassemble the parts in reverse order.



6.13 L motor CPU board

Replacement part: 34085-BA02

1. Remove board L (34085-1460). (See 6.3.2.)
2. Replace the L motor CPU board (34085-BA02).
3. Reassemble the parts in reverse order.



6.14 L motor driver board

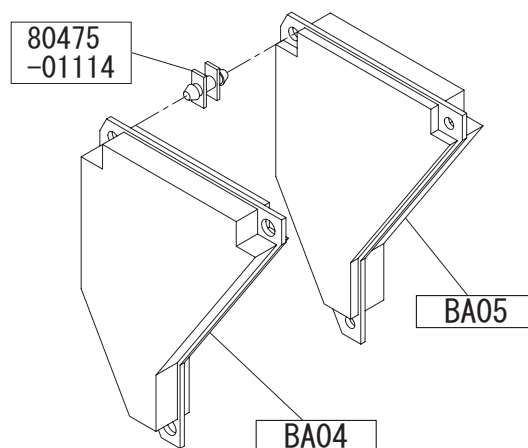
Replacement part: 34085-BA03

1. Remove board L (34085-1460). (See 6.3.2.)
2. Replace the L motor driver board (34085-BA02). (See 6.13.)
3. Reassemble the parts in reverse order.

6.15 R motor CPU board

Replacement part: 34085-BA04

1. Remove board R (34085-1360). (See 6.3.1.)
2. Replace the R motor CPU board (34085-BA04).
3. Reassemble the parts in reverse order.



6.16 R motor driver board

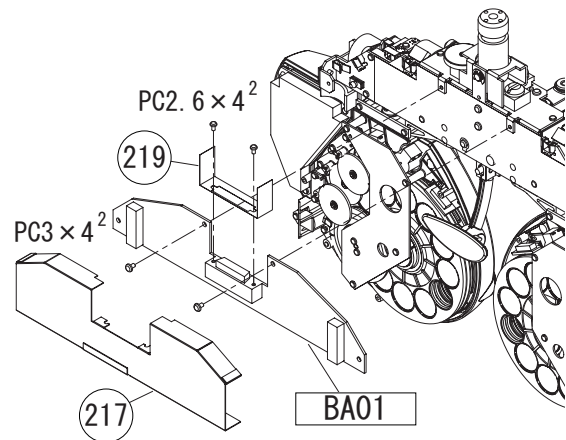
Replacement part: 34085-BA05

1. Remove board R (34085-1360). (See 6.3.1.)
2. Replace the R motor driver board (34085-BA05). (See 6.15.)
3. Reassemble the parts in reverse order.

6.17 MB main board

Replacement part: 34085-BA01

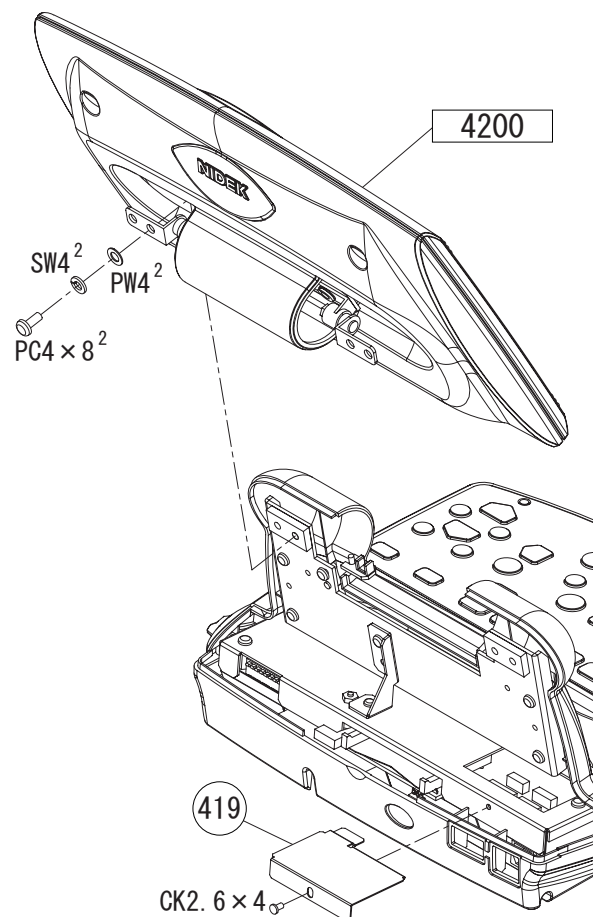
1. Remove the covers. (See 5.1.)
2. Unscrew PC2.6×4 (n=2) and remove plate EMC (34085-M217) and cover holder (34085-M218).
3. Remove all the connectors on the MB main board (34085-BA01).
4. Unscrew PC3×4 (n=4) and replace the MB main board (34085-BA01).
5. Reassemble the parts in reverse order.
 - * Never fail to reattache the memory (IC16) on the new MB main board.



6.18 LCD AS

Replacement part: 34085-4200

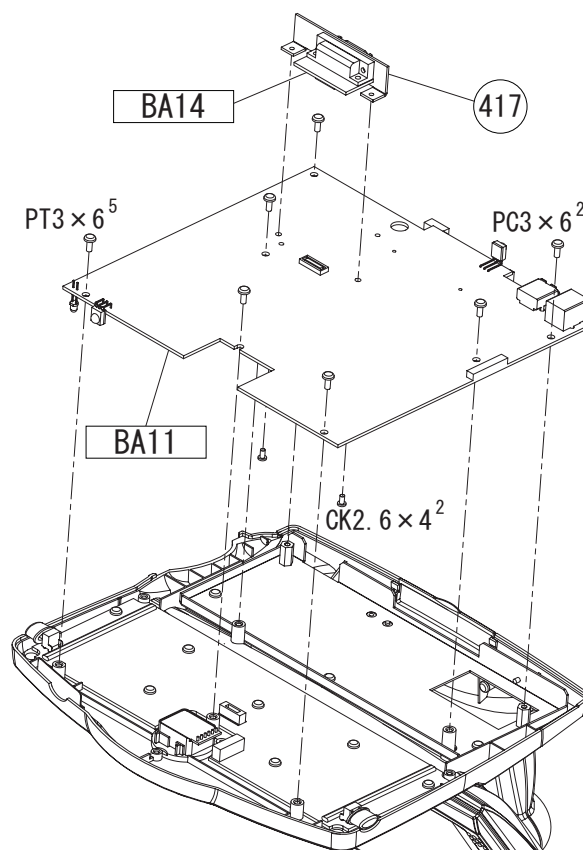
1. Remove the rear cover AS (34085-4300). (See 5.2.1.)
2. Unscrew CK2.6×4 and remove the brace cover (34085-M419).
3. Remove connectors J12 and J13 on the CB main board (34085-BA11).
4. Remove PC3×6 (n=1) and the sensor panel (34085-M421).
5. Remove PC4×8 (n=4), SW4 (n=4) and PW4 (n=4). Turn the LCD AS (34085-M421) backward and move it toward the back to replace it.
6. Reassemble the parts in reverse order.



6.19 CB main board

Replacement part: 34085-BA11

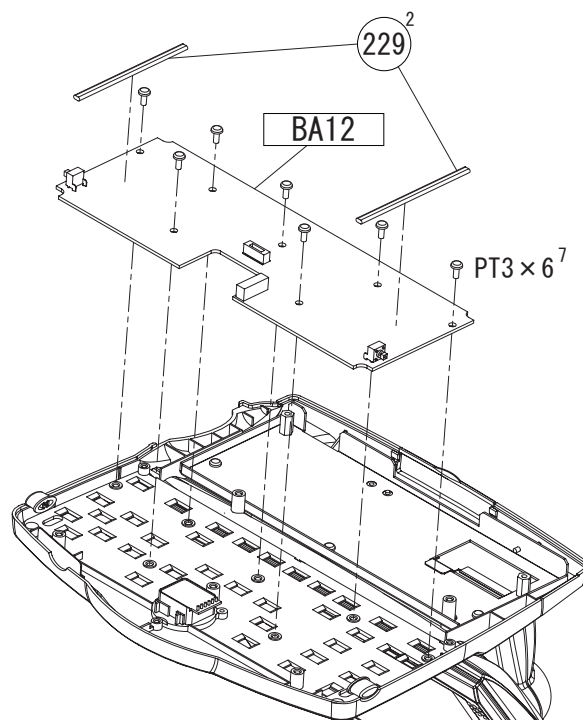
1. Remove the EMC cover (34085-M418). (See 5.2.2.)
2. Unscrew CK2.6×4 and remove the brace cover (34085-M419). (See 6.18.)
3. Remove connectors J12 and J13 on the CB main board (34085-BA11).
4. Remove PT3×6 (n=5) and PC3×6 (n=2), and remove the CB main board (34085-BA11) together with the connector plate (34085-M417) and the link board (34085-BA14).
5. Unscrew CK2.6×4 (n=2), and remove the link board (34085-BA14) together with the connector plate (34085-M417), and replace the CB main board (34085-BA11).
6. Reassemble the parts in reverse order.



6.20 Key I/F board

Replacement part: 34085-BA12

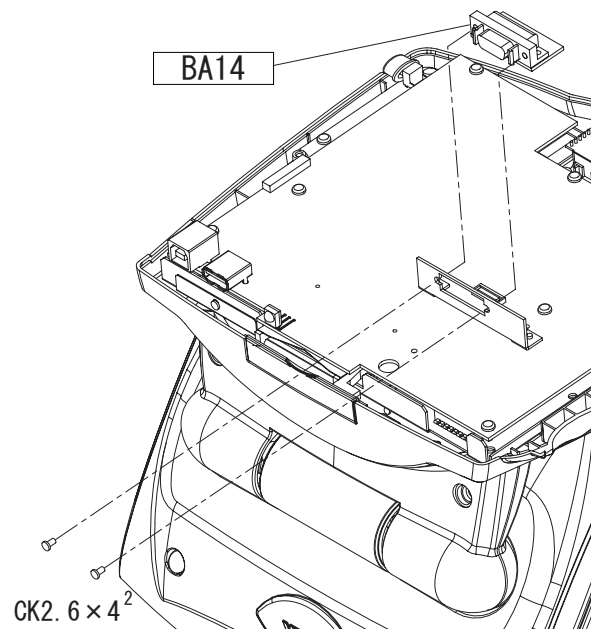
1. Remove the CB main board (34085-BA11). (See 6.19.)
2. Remove the gasket (35015-M229, n=2).
3. Unscrew PT3×5 (n=7) and replace the key I/F board (34085-BA12).
4. Reassemble the parts in reverse order.



6.21 Link board

Replacement part: 34085-BA14

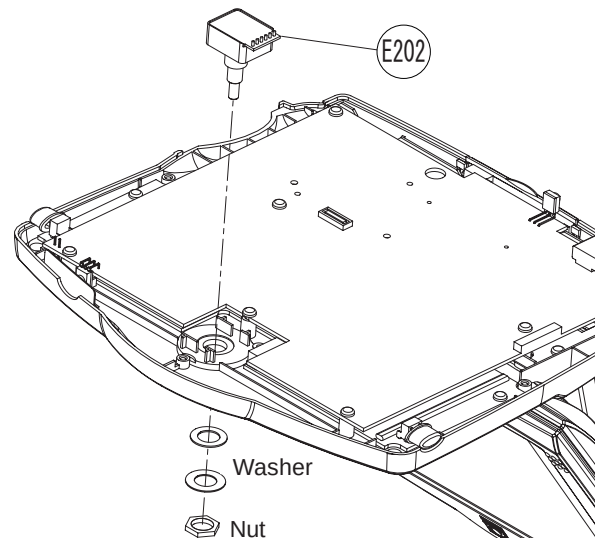
1. Remove the EMC cover (34085-M418).
(See 5.2.2.)
2. Unscrew CK2.6×4 (n=2) and replace the link board (34085-BA14).
3. Reassemble the parts in reverse order.



6.22 Rotary encoder

Replacement part: 34085-E202

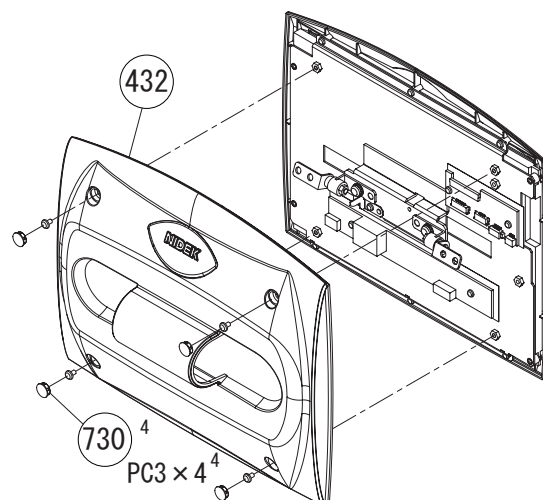
1. Remove the EMC cover (34085-M418).
(See 5.2.2.)
2. Remove connector J21 on the key I/F board (34085-BA12).
3. Remove the attached nut of the rotary encoder (34085-E202) and replace the rotary encoder.
4. Reassemble the parts in reverse order.



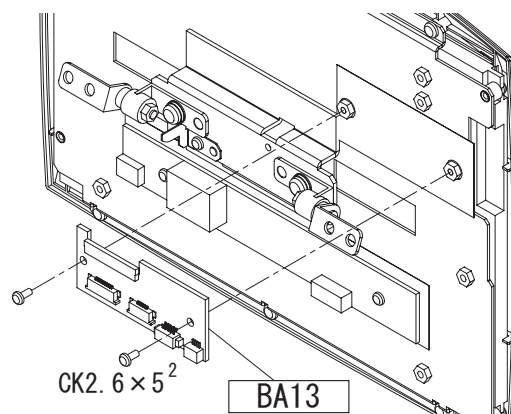
6.23 LCD I/F board

Replacement part: 34085-BA13

1. Remove the LCD AS (34085-420).
(See 6.18.)
2. Remove the cap (32105-M730, n=4).
3. Unscrew PC3×4 (n=4) and remove the rear LCD cover (34085-M432).



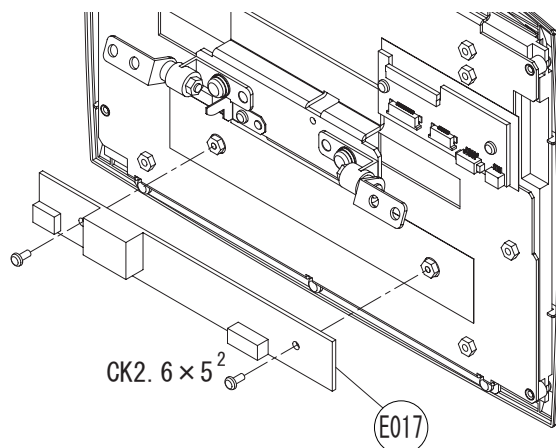
4. Remove all the connectors on the LCD I/F board (34085-BA13).
5. Unscrew CK2.6×5 (n=2) and remove the LCD I/F board (34085-BA13).
6. Reassemble the parts in reverse order.



6.24 Inverter

Replacement part: 42203-E017

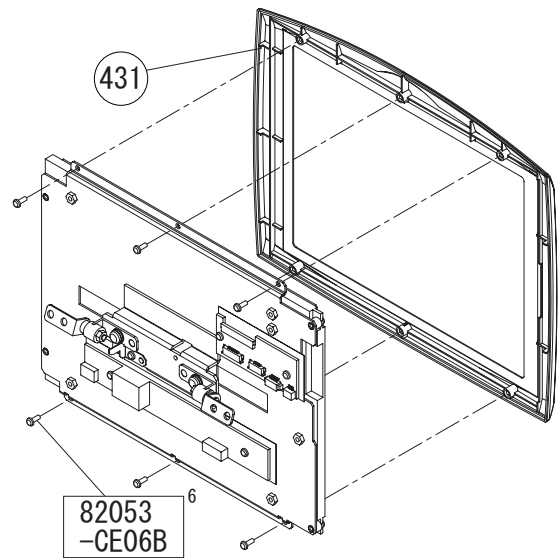
1. Remove the LCD AS (34085-4200).
(See 6.18.)
2. Remove the rear LCD cover (34085-M432).
(See 6.23.)
3. Remove all the connectors of the inverter (42203-E017).
4. Unscrew CK2.6×5 (n=2) replace the inverter (42203-E017).
5. Reassemble the parts in reverse order.



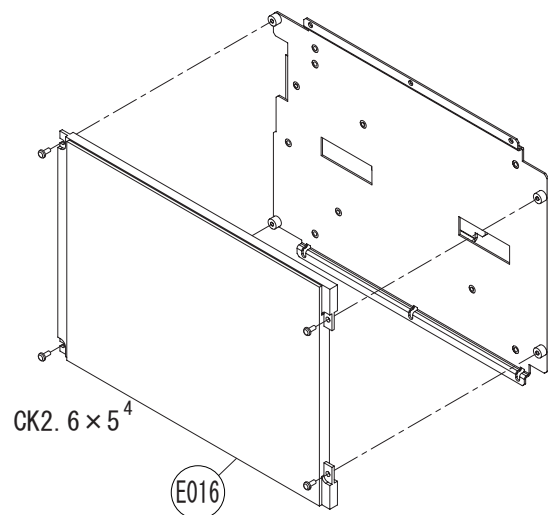
6.25 Color LCD module

Replacement part: 42203-E016

1. Remove the LCD AS (34085-4200).
(See 6.18.)
2. Remove the rear LCD cover (34085-M432).
(See 6.23.)
3. Remove connector CN101 of the inverter (42203-E017).
4. Remove connector J34 on the LCD I/F board (34085-BA13).
5. Remove connector CN01 of the color LCD module (42203-E016).



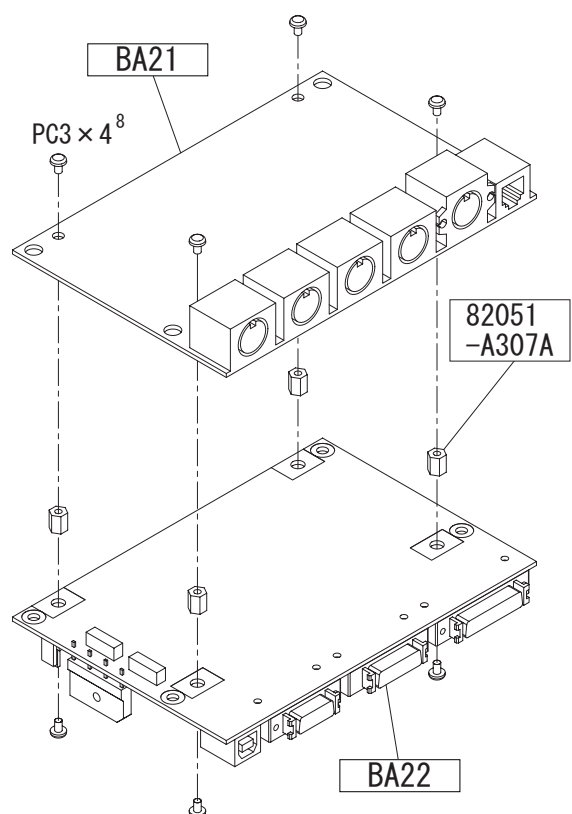
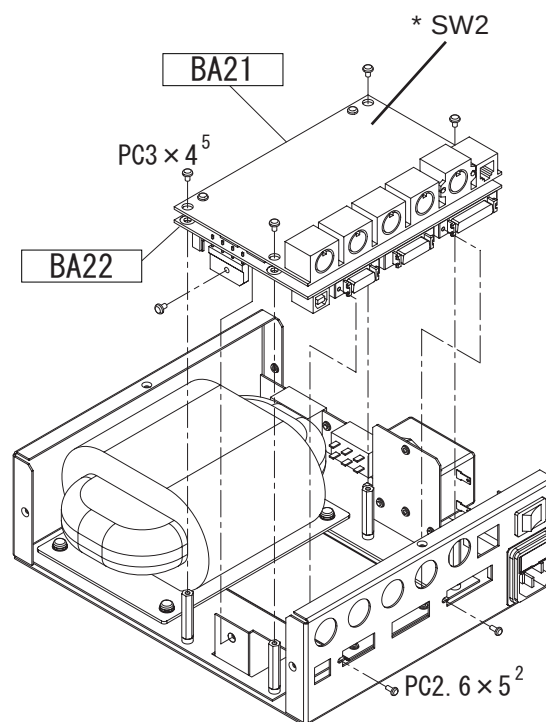
6. Unscrew CK2.6×5 (n=4) and replace the color LCD module (42203-E016).
7. Reassemble the parts in reverse order.



6.26 RB main board

Replacement part: 34085-BA21

1. Remove all the connectors connected to the RB.
2. Remove the RB from the system table.
3. Unscrew PC3×4 (n=5) and PC2.6×5 (n=2), and remove the RB main board (34085-BA21) together with the RB I/F board (34085-BA22).
4. Unscrew PC3×4 (n=4) and replace the RB main board (34085-BA21).
5. Reassemble the parts in reverse order.
 - * Verify that the SW2 on the RB main board is set to the “normal” position.
 - * It is unnecessary to reattach the memory (IC24) on the new RB main board.



6.27 RB I/F board

Replacement part: 34085-BA22

1. Remove all the connectors connected to the RB.
2. Remove the RB from the system table.
3. Remove the RB main board (34085-BA21) together with the RB I/F board (34085-BA22). (See 6.26.)
4. Unscrew PC3×4 (n=4) and replace the RB main board (34085-BA21). (See 6.26.)
5. Reassemble the parts in reverse order.

§7 ADJUSTMENT

7.1 Entering the Information/Adjustment screen

- 1. Press the Shift and Menu keys on the control box to enter the Information/Adjustment screen.
- 2. Press the button of the desired item to perform the adjustment and print the information.

Information / Adjustment

Status Information

Chart Selection

Pulse for MB Initialize

Adusting for Chart/Mask

Reset the Setup Data

Adjusting for Mirror (SSC)

Other Brand AR/LM Comm.

End

7.2 Adjustment mode of the MB

7.2.1 Adjustment of the initial pulse for the MB

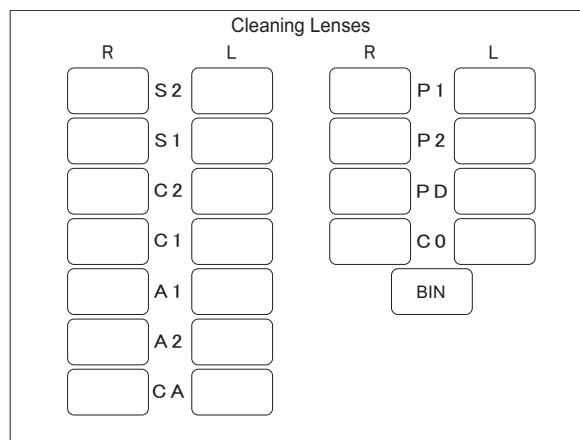
- 1. Set DIP switch No. 1 of the MB to the ON position to turn the power on.
 - * Or, set DIP switch No.1 of the MB to the ON position and press [Clear] on the screen of the control box.
- 2. Select the disk to be changed.
 - * The types of the disk are listed in the order viewed from the patient toward the MB.
- 3. Turn the dial of the control box to change the pulse for MB initialize.
- 4. Press [Clear] of the control box after changing it.
 - * Pressing [Clear] of the control box will exit from the adjustment mode.

Pulse for MB Initialize

R		L		R		L
-0004	S 2	+0012		+0030	P 1	-0065
-0004	S 1	+0000		+0030	P 2	+0000
-0012	C 2	+0013		+0044	P D	-0130
-0014	C 1	+0020		+0006	C 0	-0017
-0013	A 1	+0017				
-0016	A 2	+0015				
+0080	C A	+0040				

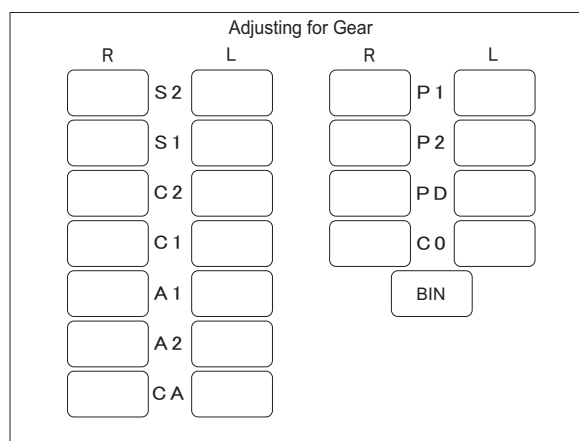
7.2.2 Lens cleaning mode

1. Remove the covers.
2. Set DIP switch No.2 of the MB to the ON position and turn the power on.
 - * Or, set DIP switch No.2 of the MB to the ON position and press [Clear] on the screen of the control box.
3. Select the disk to be changed.
 - * The types of the disk are listed in the order viewed from the patient toward the MB.
4. Turn the dial of the control box to turn the specified disk.
5. Clean the lens.
6. Press [Clear] of the control box after cleaning.
 - * Pressing [Clear] of the control box will exit from the lens cleaning mode.



7.2.3 Adjustment mode for gear

1. Set DIP switch No.3 of the MB to the ON position and turn the power on.
 - * Or, set DIP switch No.3 of the MB to the ON position and press [Clear] on the screen of the control box.
2. Select the disk that the gear is to be adjusted.
 - * The types of the disk are listed in the order viewed from the patient toward the MB.
3. Turn the dial of the control box to adjust the gear.
 - 1) Binocular mode: when pressing either R or L, the same disks for both R and L will be specified.
 - * The [BIN] button is highlighted.
 - 2) Monocular mode: when pressing either R or L, only the selected disk will be specified.
 - * The highlighted [BIN] button returns.
4. Press [Clear] of the control box after adjustment.
 - * Pressing [Clear] of the control box will exit from the adjusting mode for gear.



7.3 Chart selection

1. Enter the Information / Adjustment screen. (See 7.1.)
2. Press [Chart Selection] to enter the Chart Selection screen.
 - * The chart type that is selected at present is displayed on the screen.
3. The desired chart type can be selected by pressing the chart type.
 - * When connecting the SSC-300 series, select the SSC-330 series.
4. Press [Clear] or turn the power off and on to change the setting to the specified chart type.

7.4 Chart adjustment

1. Enter the Information / Adjustment screen. (See 7.1.)
2. Press [Adjusting for Chart / Mask].
3. Adjust the chart position.
 - 1) Pressing the up-arrow button on the Chart side: The chart moves upward.
 - 2) Pressing the down-arrow button on the Chart side: The chart moves downward.
4. Adjust the mask position.
 - 1) Pressing the up-arrow button on the Mask side: The mask moves upward.
 - 2) Pressing the down-arrow button on the Mask side: The mask moves downward.
5. Pressing [End] returns to the Adjusting for Chart / Mask screen.

7.5 Mirror adjustment

1. Enter the Information / Adjustment screen. (See 7.1.)
2. Press [Adjusting for Mirror (SSC)] to enter the Adjusting for Mirror (SSC) screen.
 - * When the chart other than the SSC is selected, this screen cannot be entered.
3. Move the RT head to the upper limit so that the chart can be seen in the middle, and press [Set].
4. Pressing [End] returns to the Adjusting for Chart / Mask screen.

7.6 Parameter setting

1. Press [Para.] on the Main Menu screen.
2. The Parameter screen appears.
3. Select the desired item to be changed.
4. Follow the procedures below to change the page of the Parameter screen.
 - 1) Pressing [Back]: displays the previous page.
 - 2) Pressing [Next]: displays the next page.
 - 3) Pressing [Nex] on the last page of the screen displays the first page of the screen.
 - 4) Pressing [Back] on the first page of the screen displays the last page of the screen.

Parameters		Page: 1
SPH step	0.25 D	
CYL mode	—	
AXIS step	5	
SPH step (Shift)	1.00 D	
CYL step (Shift)	1.00 D	
AXIS step (Shift)	1→5 / 5→1	
AXIS auto step	0.00 D	
Cross cylinder (XC) test	Auto	
XC mode S.E. fix	Yes	
CYL mode S.E. fix	No	
▲Back ▼Next		End

7.7 Printing the adjustment value

1. Printing the Status Information.
 - 1) Enter the Information / Adjustment screen. (See 7.1.)
 - 2) Press [Status Information] to print the status information.
2. Printing the initial pulse for the MB
 - 1) Enter the Information / Adjustment screen. (See 7.1.)
 - 2) Press [Pulse for MB Initialize] to print the initial pulse for the MB.

Information / Adjustment	
Status Information	Chart Selection
Reset the Setup Data Do you initialize the setup data?	Adjusting for Chart / Mask
Yes No	Adjusting for Mirror (SSC)
Other Brand AR/LM comm.	
End	

7.8 Resetting the setup data

1. Enter the Information / Adjustment screen. (See 7.1.)
2. Press [Reset the Setup Data].
3. The Reset the Setup Data window appears.
4. Pressing [Yes] return the value to the setup data.
 - * Both the AR and LM data are also cleared.
5. Select the chart. (See 7.3.)

7.9 Communication setting with other brand AR/LM

1. Enter the Information / Adjustment mode. (See 7.1.)
2. Press [Other Brand AR/LM Comm.].
3. The Other Brand AR/LM Comm. screen appears.
4. Press the number of the Connected AR and Connected LM to select the setting.

1) AR

- | | |
|-------------------------|----|
| a. NIDEK: | 00 |
| b. TOPCON RM-A, KR : | 01 |
| c. Humphery 500 to 595: | 02 |
| d. Humphery 599: | 03 |
| e. Canon R-20, R-22: | 04 |
| f. Canon RK-3: | 05 |
| g. Nikon NRK-800: | 06 |
| h. Rodenstock CX-520: | 07 |
| i. Nikon Retinomax: | 08 |

2) LM

- | | |
|------------------|----|
| a. NIDEK: | 00 |
| b. Humphery 350: | 01 |

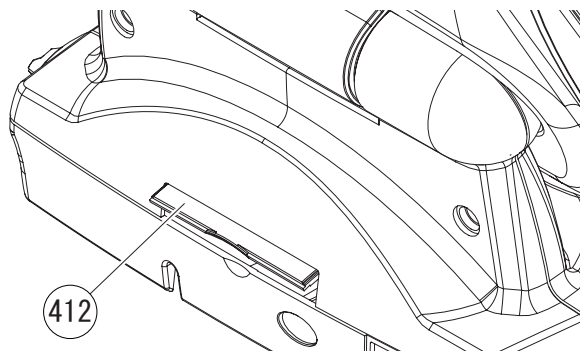
* For the latest information of the compatible models, it is necessary to check the T.B.

7.10 Adjusting the clock

1. Press [Others] on the Main Menu screen, and press [Adjust Clock] on the Others screen.
2. Select the item to be changed, and set the clock on the touch panel, and press [Enter].
3. Press [End] or [Menu] to write the clock setting and return to the normal measurement screen.

7.11 Updating the software

1. Write the updating program file in the compact flash memory card with the PC.
2. Open the CF cover (34085-M412) while the power of the RT-5100 CB is off.
3. Turn up the ejection lever and push it with tweezers and such to eject the compact flash memory card.
4. Insert the compact flash memory card in which the program is written.
5. Turn on the power while pressing the Shift key of the control box.
6. A list of the updating program files appears on the display of the control box. The files stored in the compact flash memory card in Motorola S format (*.mot) are displayed in a list.
7. Select the file name to be updated with the up-arrow / down-arrow button on the screen and press [SELECT].
8. Press [OK] in a confirmation dialog to start updating.
9. The display returns to the file list screen after the updating has been completed.
 - * Perform the updating of each device (MB/CB/RB) as necessary.
 - * The data will be reset when updating the CB. Start updating the other device continuously from step 3.
10. Turn off the power after the updating has been completed.
11. Eject the compact flash memory card in which the updating program is written.
12. Insert the original compact flash memory card, and turn down the ejection lever to close the FC cover (34085-M412).



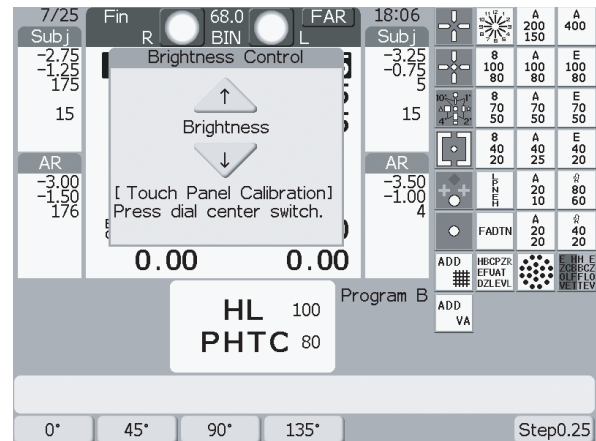
Device	File name	Example
CB	RT10CB_www.mot	RT10CB_100.mot
MB	RT10MB_www.mot	RT10MB_101T2.mot
RB	RT10RB_www.mot	RT10RB_125S.mot

7.12 Clearing the AR/LM data

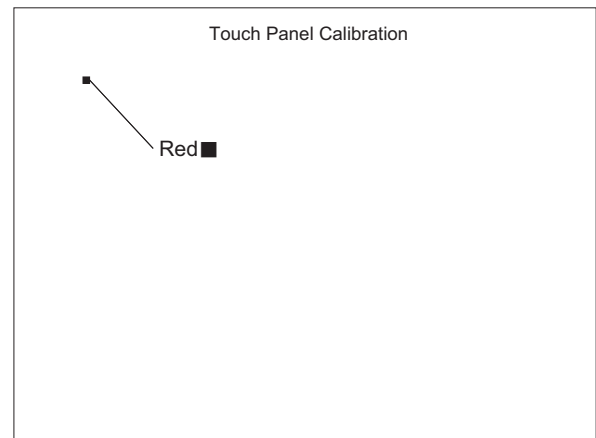
1. Press the IN key and set the data No. to "0" by turning the dial.
2. Press the Clear key to delete all the data.

7.13 Touch-screen panel calibration

1. Press the right side switch while pressing the Shift key of the control box to display the Brightness Control window.



2. Press the dial switch (in the center of the dial) to display the Touch Panel Calibration screen.
3. Press the red square in the upper-left corner of the screen with the touch-screen pen.
 - * Pressing here changes the color of the square to blue.
4. Press the red square in the upper-right corner of the screen with the touch-screen pen
5. Press the red square in the lower-left corner of the screen with the touch-screen pen.
6. Press the red square in the lower-right corner of the screen with the touch-screen pen.

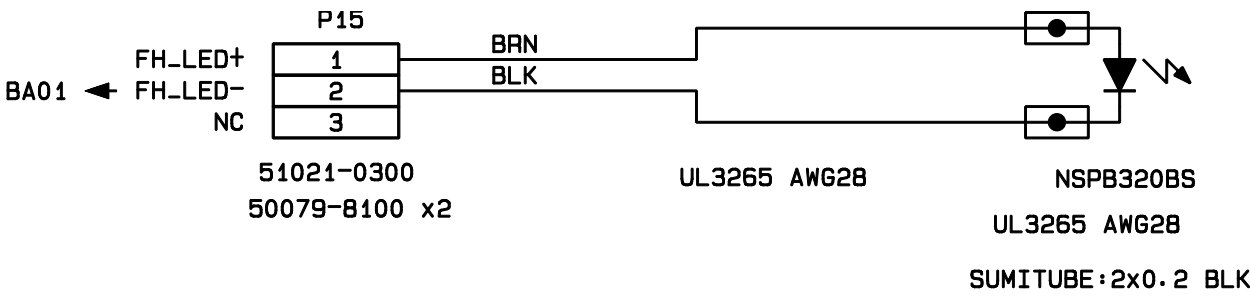


- * When the four squares at each corner of the screen are pressed, the Completed the Touch Panel Calibration message appears and the screen returns to the normal measurement screen.

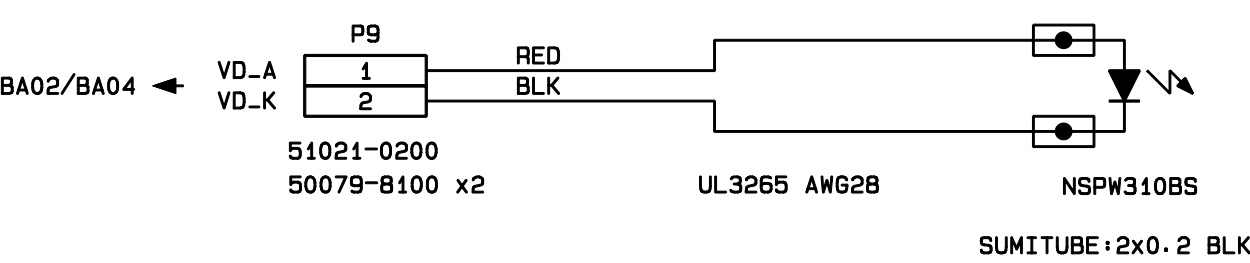


8.2 Connector cables

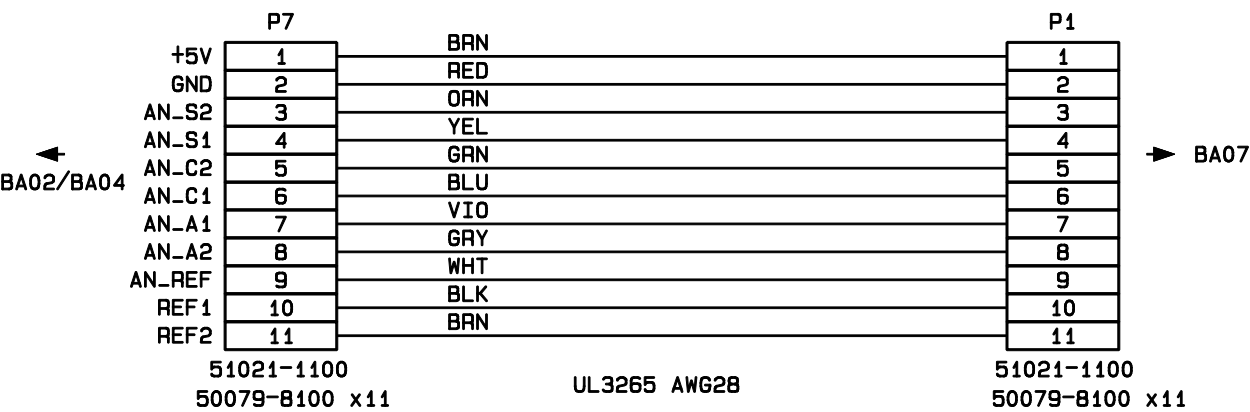
34085-EA01



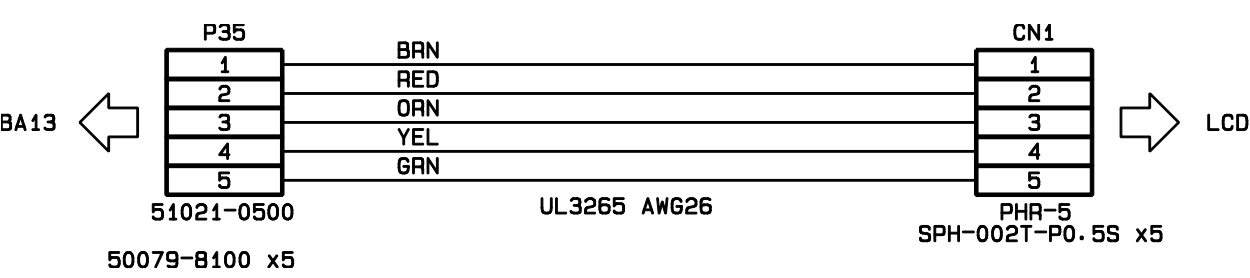
34085-EA02



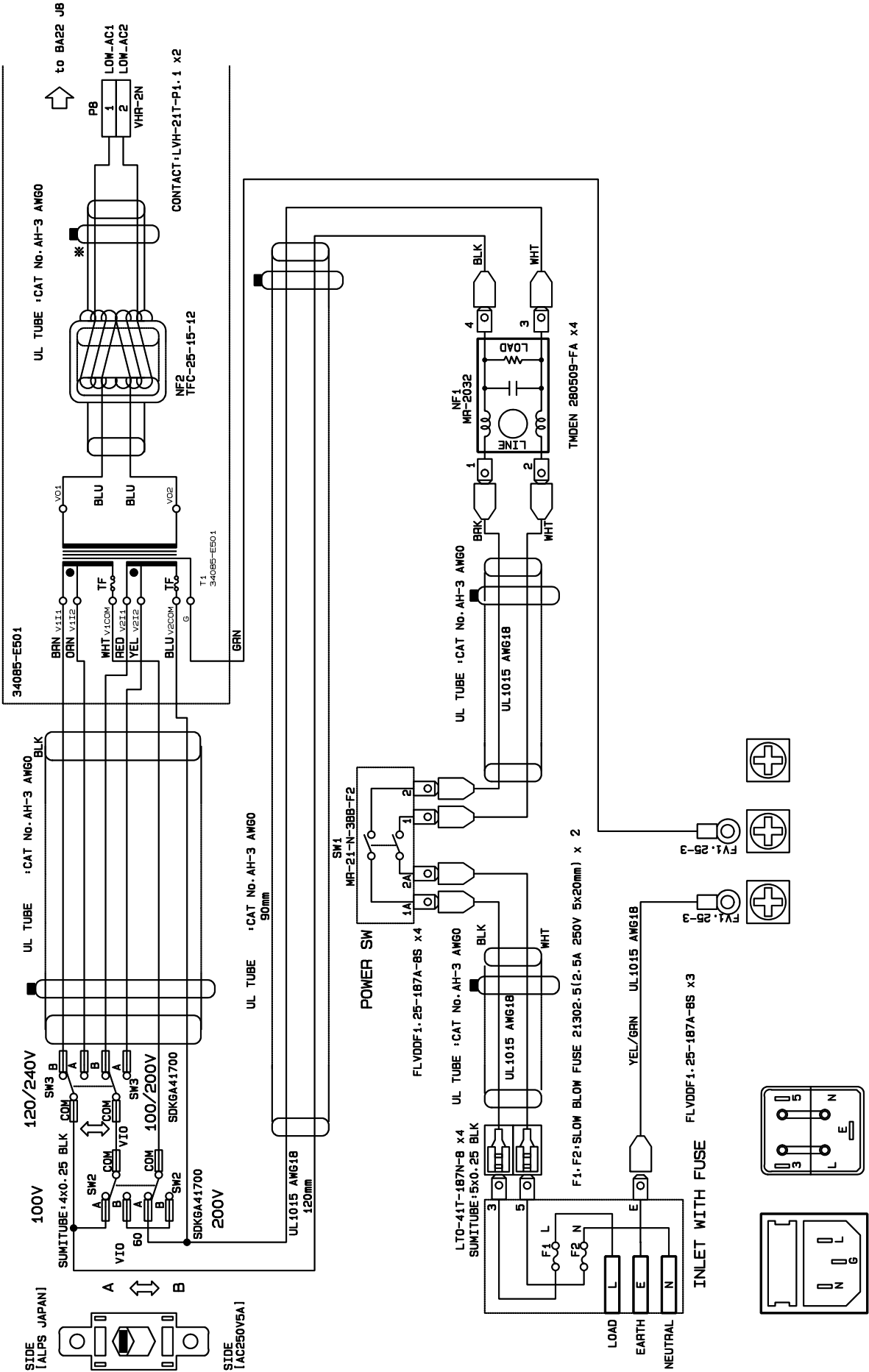
34085-EA04



34085-EA11



34085-EA21



34085-E022

VCC	1	RED	1
VCC	2	RED	2
GND	3	RED	3
GND	4	RED	4
RXIN0-	5	BLK	5
RXIN0+	6	BRN 	6
GND	7	RED	7
RXIN1-	8	BLK	8
RXIN1+	9	BRN 	9
GND	10	RED	10
RXIN2-	11	BLK	11
RXIN2+	12	BRN 	12
GND	13	RED	13
CKIN-	14	BLK	14
CKIN+	15	BRN 	15
GND	16	RED	16
N. C	17		17
N. C	18		18
GND	19	RED	19
GND	20	RED	20

DF 19G-20S-1C

L = 100

DF 19G-20S-1C

8.3 Error messages

Message	Contents
Error01: Communication Error CB-RB	Data communication error between CB and MB MB does not work Failure in the communication cable between CB and MB
Error11: Communication Error CB-RB	Data communication error between CB and MB MB does not work Failure in the communication cable between CB and MB
No appointment data!!	No specified data of AR and LM The No. of the specified data does not exist. AR and LM to be input is not connected. Failure in the connecting cable
No data!!	The data to be input in IC card and such does not exist.
Chart doesn't work.	Changing chart is attempted while the chart is moving. Chart is not connected. Failure in the connecting cable Failure in the communication cable between CB and RB
Setup data is initialized.	The data stored in a battery on the CB was deleted or changed from any cause (failure in battery and such). The setup data is reset by pressing Shift and Menu buttons on the Menu screen.
CF card -- Read Error!!	Test program cannot be input. The CF is not inserted or there is no data in the CF. Failure in the connector of the CF
CF card -- Write Error!!	Test program cannot be output. The CF is inserted. Insufficient space in the CF Failure in the connector of the CF
CF card -- File Error!!	The specified image file in the CF breaks.
CF card -- File not found!!	The specified image file in the CF does not exist.
CF card -- Card not found!!	The CF is not inserted (when reading the image file).

8.4 Parameters

Page	Item	Default	Set contents
1	SPH step	0.25D	0.12D / 0.25D
	CYL mode	-	- / +
	AXIS step	5	1/5
	SPH step (Shift)	1.00D	1.00D / 2.00D / 3.00D
	CYL step (Shift)	1.00D	1.00D / 2.00D / 3.00D
	AXIS step (Shift)	1→5/5→1	1→5/5→1 / 1→5/5→15
	AXIS auto step	0.00D	0.00D to 2.00D (0.25 increments)
	Cross cylinder (XC) test	Auto	Auto / ±0.25D / ±0.50D
	XC mode S.E fix	Yes	Yes / No
	Cyl mode S.E fix	No	Yes / No
2	Prism display format	X/Y	X/Y / rθ
	Prism (0.1△Repeat)	0.7 sec	1.0 sec / 0.7 sec
	Input prism from LM	No	Yes / No
	Fog for binocular balance	Yes	Yes / No
	Preset VA	H.line	1 letter / H.line / No
	Preset ADD	Yes	Yes / No
	SPH Far → Near	SPH+ADD	SPH / SPH+ADD
	(-) ADD	No	Yes / No
	Working distance (WD)	40 cm	35cm to 70cm (5cm increments)
	Convergence/Divergence test	Yes	Yes / No
3	Print CL data	No	Yes / No
	Print TL data	No	Yes / No
	Clear after print	Yes	Yes / No
	Printer	Standard	Standard / Canon / HP / Off
	Print format	All data	All data / w/o AR / Unaided / Subj / Final
	Date format for print	mm/dd/yyyy	mm/dd/yyyy dd/mm/yyyy yyy/mm/dd
	Print list	Yes	Yes / No
	Operating timer	Yes	Yes / No
	Program A	Fix	Fix / User
	Program B	Fix	Fix / User
4	Adjust ADD Subj → Final	Yes	Yes / No
	Preset power of Subj 1	AR	AR / LM
	Preset power of Subj 2	All data	All data / CYL=0 / Clear
	Intelligent XC	Yes	Yes / No
	Dial switch	S→C→A	S→C→A / S→C→A→VA / S→A→C / S→A→C→VA
	Lens for Retino	+1.50D	+1.50 D / +2.00D
	Auto lamp off	15 min	Off / 5 min / 15 min / 30 min
	Beep sound	High	High / Low / Off
	Chart link	Yes	Yes / No
	Memory function	Yes	Yes / Memory box / No
5	AR port	AR	AR / ARK / RKT
	LM port	LM	LM / ARK / RKT / AR
	Input sequence from PC	Hold	Hold / Pass
	Daisy chain communication	No	No / Server / Client a (to 4)